

NATIONAL BUREAU OF STANDARDS REPORT

9938

Annex to

A Simulation of a Highway Maintenance Operational Unit



U.S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT

NBS REPORT

4314451

February 1969

9938

Annex to A Simulation of a Highway Maintenance Operational Unit

By

W.F. Druckenbrod
H.D. Boulard
W.G. Hall
J.A. Yurow

IMPORTANT NOTICE

NATIONAL BUREAU OF STANDARDS
for use within the Government. This Report is not to be distributed outside the Government without prior approval of the Director of the Bureau of Standards, Washington, D.C. The Report has been specifically prepared for use within the Government. It is not to be distributed outside the Government without prior approval of the Director of the Bureau of Standards, Washington, D.C.

Approved for public release by the
Director of the National Institute of
Standards and Technology (NIST)
on October 9, 2015

ess accounting documents intended
is subjected to additional evaluation
e listing of this Report, either in
the Office of the Director, National
by the Government agency for which
copies for its own use.



U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

PREFACE

This annex supplements the basic report "Simulation Model of a Highway Maintenance Operational Unit."

The flow charts contained herein are intended as a supplement to the more functionally oriented charts in the report. These charts are at a micro level, and come very close to exhibiting a one-to-one correspondence between the computer program statement and a flow chart expression.

The notation and symbology were deliberately kept simple in order to facilitate correlation between the computer program and the flow charts. The tables included show:

Table (1) Program Statement Numbers and Corresponding Connectors by Page

Table (2) Entry and Exit Connectors by Page

Table (3) Exit Connector Page by Corresponding Entry Connector

Table (4) Statement Numbers by Page

Table (5) Computer Printout

Flow Chart Description

Subroutines

HZONE σ Pages S1 and S2

This subroutine is entered each time a new job is encountered. Arguments are job parameters, highway, and zone lists. Calculations are travel times and control parameters for the job.

RANK δ Page S3

This subroutine is used to rank the entries within an array in ascending order. Arguments are the arrays JRANK & JUNK1 having the same dimension. JRANK(I) = I and JUNK1 is the array on which the ranking is required. Upon exit from the subroutine JRANK(I) contains the rank index of JUNK1(I).

α Page S4

This subroutine checks the arrays used for the job inventory list and finds an available slot. There are no arguments as such; however, the last job which has been removed from the inventory is "remembered" unless that slot has been used subsequently. Output is the index of a usable slot. This subroutine is not in standard FORTRAN form.

β Page S5

This subroutine calls HZONE and calculates time on job. This is not in standard FORTRAN form.

Initialization

Pages 1-2

This section reads in or constructs bookkeeping type parameters. Included are such things as maximum dimensions for lists, holiday indices, day of week of the first day of the year, number of days in each month and the name of each month.

Input - (All input sections include an optional print back)

Page 3

This section reads the names of the I-O gates, the input and output gates and the job title, number available and hourly cost of personnel for each job category.

Page 4

This section reads the name, serial number, number, number available, and hourly cost for each type of equipment.

Pages 5-6

This section reads parameters belonging to each job type including a description of each basic crew which can work at this job type. The nominal hourly cost for each crew is calculated.

The variable HCST(I) is the nominal hourly cost for crew I. It is the sum of number of crew members of each labor category times the hourly cost of each equipment type used times the hourly cost.

$$\begin{aligned} \text{HCST}(I) = & \text{IE01}(I) * \text{CE1} + \text{IE02}(I) * \text{CE2} + \text{IE03}(I) * \text{CE3} + \text{ILAB}(I) * \text{CL} \\ & + \sum \text{INO}_i * \text{EQC}_i \end{aligned}$$

Nominal cost is used for all subsequent rankings; it may differ slightly from the true cost since no labor category shifts are included.

Pages 7-8

This section reads a list of highways which may be referenced by highway number rather than zone number. For each such highway, the highway number, the zones through which it passes and the miles per zone are read.

Page 9

This section reads weather data and constructs a weather table.

Page 10

This section reads the depot to zone travel time for each zone.

Page 11

This section reads recurring or periodic jobs. Several one-time-only initialization functions are performed.

$$\text{XMULT} = (\text{IESD}(J) - 365 + \text{NTST} * \text{IPER}(J)) / \text{IPER}(J)$$

XMULT is a fudge factor used as a start-up device. Its effect is to implement the assumption that each recurring job encountered on day 1 of the simulation was actually discovered on the earliest starting day for this job type in the preceding year plus whatever multiple of the period is required to get the starting date to within the last period of the preceding year. The work units of the job in the recurring file are replaced as the job is put into the job inventory by the work units times the ratio of the period minus the number of days of the

last period which were in the preceding year to the total period. This enables the beginning date of each recurring job to be independent of the simulation starting date by assuming that these jobs have been discovered some time in the preceding year during the last period for the type. Hence the work units from the recurring prototype file are reduced linearly as the job is put into inventory to compensate for that portion of the period which was in the preceding year.

Day Initialization

Pages 12-18

This section clears all accumulated daily sums of costs, worker hours, etc.; if appropriate, weekly and yearly sums are cleared also. The current simulation day is examined to ascertain the day of the week, holiday status, and length of work week; these are used to preset gates to allow for reports, weekly planning, and to establish criteria for determining the jobs which may be worked on. Regular (read in) and recurring jobs are put into the job inventory. Weather generated jobs are then put into inventory.

Weekly Plan Preparation

Pages 19-26

The projected work for the week is calculated and reported. Estimates are based on full work days with no allowance for emergency or weather generated jobs.

Page 23

$$WPR = VPR * MULT / (IVDL - J8 + 1)$$

$$L1 = \frac{WPR}{PROD * TOJ}$$

Page 25

$$SLH(M, N) = SLH(M, N) + Y * ILAB(L)$$

$$SE1H(M, N) = SE1H(M, N) + Y * IEO1(L)$$

$$SE2H(M, N) = SE2H(M, N) + Y * IEO2(L)$$

$$SE3H(M, N) = SE3H(M, N) + Y * IEO3(L)$$

$$TCL(M, N) = TCL(M, N) + Y * (ILAB(L) * CL + K1 * CE1 + K2 * CE2 + K3 * CE3)$$

$$\begin{aligned} \text{NDEQT(L5)} &= \text{NDEQT(L5)} - \text{L1} * \text{INO(L4)} \\ \text{EQH(M,N,L4)} &= \text{EQH(M,N,L5)} + \text{INO(L4)} * \text{Y} \\ \text{EQTOI(M,N)} &= \text{EQTOL(M,N)} + \text{INO(L4)} * \text{Y} * \text{EQC(L5)} \end{aligned}$$

Report Print

Pages 26-29

The weekly plan report, and daily, weekly, and yearly work reports are printed. All these reports have essentially the same format.

Page 27

$$Y = \text{SLH(M,I)} + \text{SE1H(M,I)} + \text{SE2H(M,I)} + \text{SE3H(M,I)}$$

Post Report Gating

Page 30

Depending upon which report has just been printed, the appropriate bookkeeping is done and proper control transfers are set.

Pre Assignment Processing

Pages 31-33

For each job in the job inventory, an indicator is set to show which jobs are subject to normal crew assignment procedures. Those jobs excluded are emergency jobs, weather generated jobs, jobs which have a discovery date after simulation date, and jobs which are precluded by weather. All auxiliary crews are released and IDELTA is constructed.

Crew Assignment

Page 33 - Daily Inventory Construction

The daily inventory construction is treated as a special case of inventory updating; hence, this sequence maybe reentered after some crew assignments have been made.

Pages 33-35 - Weather Jobs

Weather generated jobs have crews assigned in this section. Generally, these jobs are considered to be sufficiently large to require all available resources so that assignment is constrained by crews available rather than by any characteristics of the job itself. The daily resource inventories are updated.

Page 34

SLH(M,J) = SLH(M,J) + X * X9
SE1H(M,J) = SE1H(M,J) + X * X1
SE2H(M,J) = SE2H(M,J) + X * X2
SE3H(M,J) = SE3H(M,J) + X * X3
TCL(M,J) = TCL(M,J) + X * (X9 * CL + X1 * CE1 + X2 * CE2 + X3 * CE3)
EQH(M,J,J7) = EQH(M,J,J7) + X6 * X
EQTOT(M,J) = EQTOT(M,J) + X * X6 * EQC(J7)

Page 35 - Inventory Update

Daily resource inventories are updated to reflect depletion by weather generated jobs.

Pages 35-36 - Permanent Crew Feasibility

This section verifies that there are adequate resources to fill all permanent crew assignments which have been made prior to simulation day for all jobs on which work is possible. If resources are inadequate, all permanent crew assignments are canceled; otherwise, permanent assignments are confirmed and resource inventories are reduced accordingly.

Pages 36-40 - Normal Crew Assignment

The normal assignment procedures are used to assign crews made up from resource inventories to jobs other than weather generated, emergency, and X type jobs.

Page 41 - JOB X Inventory

All remaining labor resources are converted to man hours from man days and tentatively assigned to JOB X.

Pages 41-46, 53 - Emergency Job Assignment

All jobs in inventory are searched to locate emergency jobs. Assignments to these jobs are made in preferential order from JOB X, from among auxiliary crews, or from permanent crews. Within each category of assigned crew, choice is made by favoring the last crew assigned to a job.

Pages 41-42 - From JOB X

Work units, costs, labor hours, and equipment hours are accumulated for those emergency jobs which can be accomplished by JOB X resources.

Page 42

```
TCL(M,1)      = TIME * (Y * CL + X1 * CE1 + X2 * CE2 + X3 * CE3) +
                  TCL(M,1)
EQH(M,1,K3)   = EQH(M,1,K3) + INO(N) * TIME
EQTOT(M,1)    = EQTOT(M,1) + INO(N) * TIME * EQC(K3)
NDEQT(K3)     = NDEQT(K3) - INO(N) * TIMET
```

Pages 42-44 - From Auxiliary Crews

The closest (in travel time) auxiliary crew which can accomplish the emergency job is released from the job to which it has been assigned and assigned to JOB X for as many hours as are required to do the emergency job. Work done, costs, etc. done on the job to which the crew was originally assigned are accumulated for that fraction of the day for which the crew remained assigned. (8 hours - emergency job time). The JOB X emergency assignment section is reentered.

Page 44

```
(8 * ILAB(J5) + DXL) : (2 * TIME)
(8 * (IE01(J5)+IE02(J5) + IE03(J5)) + DXE1 + DXE2 + DXE3) : TIME
```

Pages 45-46 - From Permanent Crews

The procedure is exactly like from auxiliary crews above, except selection is made from among permanent crews.

Page 45

Exactly as the two instructions on Page 44.

Pages 46-52 - Summary Creation

All costs, labor hours, equipment hours, etc., which appear in the reports are accumulated. Surplus capability (fractional crew days) for a job which is completed in less than a full day is put into JOB X or credited to another job of the same type. Appropriate reports are printed, the simulation day is advanced and the day initialization section is reentered.

Table 1

Program Statement Numbers and Corresponding Connectors by Page

Page	Statement	Connector	Other Reference (page)
1	16 400 410	start - -	
2	- 45 65	2 - -	1
3	1 2 3 46 47 1102	3A - - - - 3	2
4	48 49 50 52	4 - - -	3
5	4 5 6 9200	5 5A 5B -	4 6 6
6	- 7 8 9 10 11 12 13 14 15 9210 9220 9370	6	5
7	20 21 22 23 39 9230 9240	7 - - - - - -	5

Table 1 continued

Page	Statement	Connector	Other Reference
8	24	8	
	25	-	7
9	28	9	
	29	-	8
	30	-	
	31	-	
	32	-	
	33	-	
	34	-	
	35	-	
	36	-	
	37	-	
	38	-	
10	40	10	
	41	-	9
	42	-	
	43	-	
	44	-	
	441	-	
11	51	11	
	53	-	10
	54	-	
	55	-	
	56	-	
	57	-	
	300	-	
	305	-	
	310	-	
	315	-	
	9960	-	
12	58	12	
	700	12A	
	701		11
	702		30
	703		
	1104		
13	-	13	
	1036	-	12
	1038	-	
	1040	-	
	1042	-	
	1043	-	

Table 1 continued

Page	Statement	Connector	Other Reference
14	-	14	13
	62	-	
	69		
	70	14A	15,18
	71	α_1	
	440	-	
	442	-	
	444	-	
	709	-	
15	63	15	14
	64	β_1	
	72	-	
	630	-	
	631	-	
16	61	-	
	80	16	15,14
	81	α_2	
	84	16B	17
	175	16A	17
	301	-	
	304	-	
	704		
17	82	-	
	83	-	
	302	17	16,14
	303	-	
	325	17A	Subroutine
	820	-	
	830	-	
	-	β_1	
	3030		
18	-	18	16
	90	-	
	91	α_3	
	92	-	
	93	α_4	
	95	-	
	96	α_5	
	840	-	
	3090	-	
	3096	-	
	150		

Table 1 continued

Page	Statement	Connector	Other Reference
19	- 1024 2000 2021 2022 3020 3095 -	19 - - - - - δ_1	18
20	1001 1002 - - -	20 - 20A 20B 20C	19 21 21 21
21	- 1003 1004 1015	21 - - 21A	20 20 20
22	- 1114 1116 2050	22 - - 22A	21 26
23	- - - 1005 1006 1007	23 23A 23B - - 23D	22 25 25 24
24	1008 1009 1010 1011 1012 1026	24 - - - - -	23
25	1014 1016 1018 1020	25 - 25A 25B	24 23 23
26	- 773 1106 1112 3091	26 - - - -	25 30, 52

Table 1 continued

Page	Statement	Connector	Other Reference
27	-	27	
	775	-	26
	777	-	
28	-	28	27
	1044	-	
29	-	29	28
	780	-	
	782	-	
	783	-	
	785	-	
	7801	-	
30	766		
	772	30	29, 26, 52
	774		
	776		
	1028		
	1641		
	7730		
31	-	31A	32
	105	31	18, 35
	111		
	112		
	113		
	452		
	453		
	1046		
32	114	32	31
	115		
	116		
	117		
	118		
	119		
	121		
	122		
	123	32A	31
	124	32B	31
	454	32C	31
33	110	33A	31, 32
	139		
	250	33	32, 36
	450		
	451		

Table 1 continued

Page	Statement	Connector	Other Reference
34	-	34	33
	-	34A	35
	420		
	422		
	424		
	426		
	428		
	430		
	432		
35	-	35	34
	106	35A	33
	125		
	126		
	141	35E	37
	172	35D	40
	176	35C	36
	177	35B	36
	434		
	436		
36	-	36	35
	107		
	129		
	130		
	131		
	140	36A	35
	157		
	161	36B	35
37	132	37	36
	133		
	138		
	144		
	148	37C	38, 39, 40
	178	37B	40
38	142	38	37, 36
	143		
	145		
	280		
	285		
	1452		
	1454		

Table 1 continued

Page	Statement	Connector	Other Reference
39	146 147 162 163 164 169 180	39 39A	38,36 37
40	160 165 168 170 171 179 181 275	40B 40 40C 40A	37 39 38 37
41	- 2004 2006 3006	41 41A	40 46
42	- 200 201 202 203 204 205 2008 2010	42 42B 42A	41 53 41
43	- - - 206 207 208 221	43 43B 43C 43A	42 44 44 44,42
44	- 209 210 211 218	44 44A 44B	43 43 43

Table 1 continued

Page	Statement	Connector	Other Reference
45	- 214 215 216 217 220 290 318	45	44
46	- - - 222 223 1118 1120 1130	46 46B 46C 46A	45 48 48 41,42
47	650 651 652 653 760 761 1122 1124	47	46
48	- 762 763 - 1126 7611	48 48A 48B 48C - 48D	47 47 46 51 51
49	- 7600 7601 7602 7604 7620	49	48
50	- 7622 7624	50	49

Table 1 continued

Page	Statement	Connector	Other Reference
51	-	51	50
	2003	51B	48
	7610	51A	48, 49
	7626	-	
	20030	-	
52	-	52	51
	770	52A	33, 51
	771	-	
	1110	-	
	2002		
53	212		
	213		
	219	53	44, 45

Table 2
Entry and Exit Connectors by Page

<u>Page</u>	<u>Entry</u>	<u>Exit</u>	<u>Page</u>	<u>Entry</u>	<u>Exit</u>	<u>Page</u>	<u>Entry</u>	<u>Exit</u>
1	START	2	17	17	16A	31	31	32
2	2	3		17A	16B		31A	32A
3	3	4	18	18	14A			32B
	3A				19			32C
					31			33
4	4	5	HALT	19	19	32	32	31A
					20		32A	33
					20		32B	33A
5	5	6	20	20	21		32C	
	5A	7		20A	21A			
	5B	HALT		20B		33	33	34
				20C			33A	35A
6	6	5A	21	21	20A			52A
		5B		21A	20B	34	34	35
		HALT (3)			20C			
7	7	8	HALT (2)	22	22	35	35	31
				22A	23		35A	34A
8	8	9		23	24		35B	36
9	9	10		23	24		35C	36A
				23A	25A		35D	36B
				23B	25B		35E	
10	10	11		23C		36	36	33A
				23D			36A	37
11	11	12	HALT (2)	24	24		36B	38
					23D			39
12	12	13		25	25	37	37	35E
	12A			25A	23A		37B	39A
13	13	14		25B	23B		37C	40A
					26			40B
14	14	15	26	26	22A			
	14A	16		26A	27	38	38	37C
		17			30			40C
15	15	14A	27	27	28	39	39	37C
		16					39A	40
16	16	17	28	28	29			
	16A		29	29	30			
	16B		30	30	12A			
					26A			

Table 2 (continued)
Entry and Exit Connectors by Page

<u>Page</u>	<u>Entry</u>	<u>Exit</u>	<u>Page</u>	<u>Entry</u>	<u>Exit</u>
40	40	35D	52	52	26A
	40A	37B		52A	30
	40B	37C			
	40C	41			
41	41	42	53	53	42B
	41A	46A			
42	42	43			
	42A	43A			
	42B	46A			
43	43	44			
	43A	44A			
	43B	44B			
	43C				
44	44	43B			
	44A	43C			
	44B	45			
		53			
45	45	46			
		53			
46	46	41A			
	46A	47			
	46B	48B			
	46C				
47	47	48			
		48A			
48	48	46B			
	48A	46C			
	48B	49			
	48C	51A			
	48D	51B			
49	49	50			
		51A			
50	50	51			
51	51	48C			
	51A	48D			
	51B	52			
		52A			

Table 3

Exit Connector Page by Corresponding Entry Connector

<u>Connector</u>	<u>Entered From</u>	<u>Connector</u>	<u>Entered From</u>	<u>Connector</u>	<u>Entered From</u>
2	1	20	19	35	34
		20A	21	35A	33
3	2	20B	21	35B	36
		20C	21	35C	36
		21	20	35D	40
4	3	21A	20	35E	37
				36	35
5	4	22	21	36A	35
5A	6	22A	26	36B	35
5B	6				
		23	22	37	36
6	5	23A	25	37B	40
		23B	25	37C	38, 39, 40
7	5	23D	24		
				38	36, 37
8	7	24	23		
				39,	36, 38
9	8	25	24	39A	37
		25A	23		
10	9	25B	23	40	39
				40A	37
11	10	26	25	40B	37
		26A	30, 52	40C	38
12	11				
12A	30	27	26	41	40
				41A	46
13	12	28	27		
				42	41
14	13	29	28	42A	41
14A	15, 18			42B	53
15	14	30	26, 29, 52		
16	14, 15			43	42
16A	17	31	18, 35	43A	42, 44
16B	17	31A	32	43B	44
				43C	44
17	14, 16	32	31		
17A	Subroutine	32A	31	44	43
17B	Subroutine	32B	31	44A	43
		32C	31	44B	43
18	16				
		33	31, 32	45	44
19	18	33A	32, 36		
				46	45
		34	33	46A	41, 42
		34A	35	46B	48
				46C	48

Table 3 (continued)

Exit Connector Page by Corresponding Entry Connector

<u>Connector</u>	<u>Entered From</u>
47	46
48	47
48A	47
48B	46
48C	51
48D	51
49	48
50	49
51	50
51A	48,49
51B	48
52	51
52A	33,51
53	44,45

Table 4

Statement Numbers by Page

<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>
1- 3	3	138	37	285	38	772	30
4- 6	5	139	33	300	11	773	26
7-15	6	140	36	301	16	774	30
16	1	141	35	302-303	17	775	27
20-23	7	142-143	38	304	16	776	30
		144	37				
24-25	8	145	38	305	11	777	27
28-38	9	146-147	39	310	11	780	29
39	7	148	37	315	11	782-783	29
40-44	10	150	17	325	17	785	29
45	2	157	36	400	1	820	17
46-47	3	160	40	410	1	830	17
48-50	4	161	36	420	34	840	18
51	11	162-164	39	422	34	1001-1002	20
52	4	165	40	424	34	1003-1004	21
53-57	11	168	40	426	34	1005-1007	23
58	12	170	40	428	34	1008-1012	24
61	16	172	35	430	34	1014	25
62	14	175	16	432	34	1015	21
63-64	15	176-177	35	434	35	1016	25
65	2	178	37	436	35	1018	25
69-71	14	179	40	441	10	1020	25
72	15	180	39	442	14	1024	19
80-81	16	181	40	444	14	1026	24
82-83	17	200-205	42	450-451	33	1028	30
84	16	206-208	43	452-453	31	1036	13
90-93	18	209-211	44	454	32	1038	13
95-96	18	212-213	53	630-631	15	1040	13
		214-217	45	650-653	47	1042-1043	13
105	31	218	44	700-703	12	1044	28
106	35	219	53	704	16	1046	31
107	36						
110	33	221	43	709	14	1102	3
111-113	31	222-223	46	760-761	47	1104	12
				762-763	48	1106	26
114-119	32	250	33	766	30	1110	52
121-124	32	275	40			1112	26
125-126	35	280	38	770-771	52		
129-131	36						
132-133	37						

Table 4

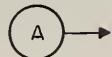
Statement Numbers by Page (continued)

<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>	<u>Statement</u>	<u>Page</u>
1114	22	7801	29				
1116	22	9200	5				
1118	46	9210	6				
1120	46	9220	6				
1122	47	9230	7				
1124	47	9240	7				
1126	48	9370	6				
1130	46	9960	11				
1452-1453	38	20030	51				
1641	30						
2000	19						
2002	52						
2003	51						
2004	41						
2006	41						
2008	42						
2010	42						
2021-2022	19						
2050	22						
3006	41						
3020	19						
3030	17						
3090	18						
3091	26						
3095	19						
3096	18						
7600-7602	49						
7604	49						
7610	51						
7611	48						
7620	49						
7622	50						
7624	50						
7626	51						
7730	30						

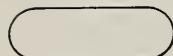
Symbols & Notation



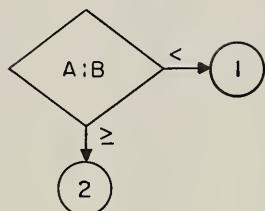
Exit Connector - see page A



Entrance Connector

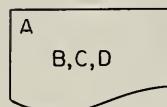


Halt or start indicator

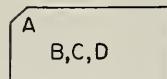


Decision Box

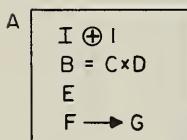
If A is less than B transfer control to connector 1
 A is greater than or equal to B transfer to 2
 Similar notation is used for =, ≠ etc.



Either a line of print or a report
 B, C, & D are printed according to format A



Input Record
 B, C, & D are read according to format A



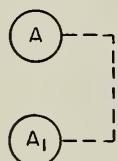
Computation Box - begins with program statement A

I is replaced by I + 1

B is replaced by CxD

E is calculated; relation is too long to fit into box and is given in text

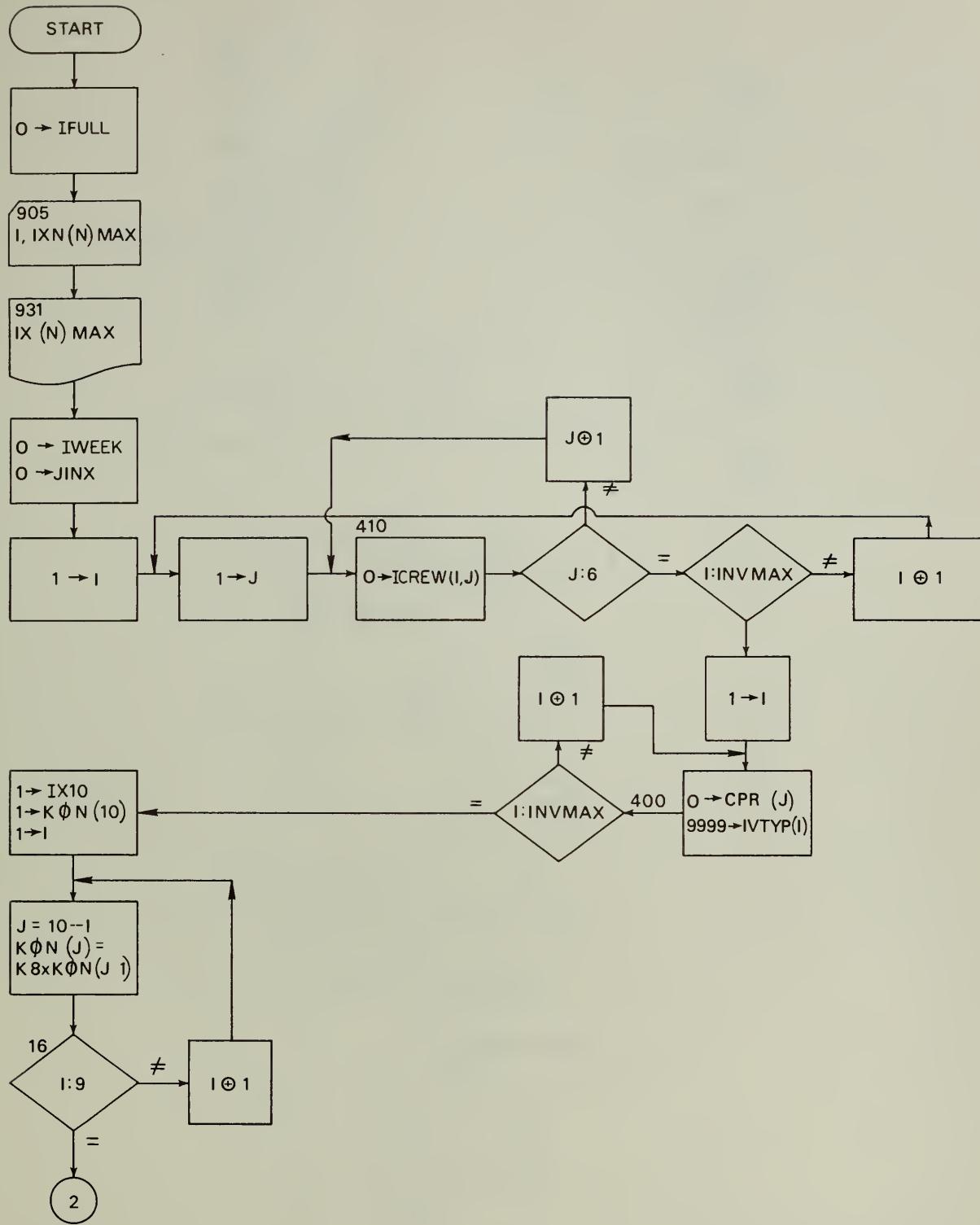
F replaces G

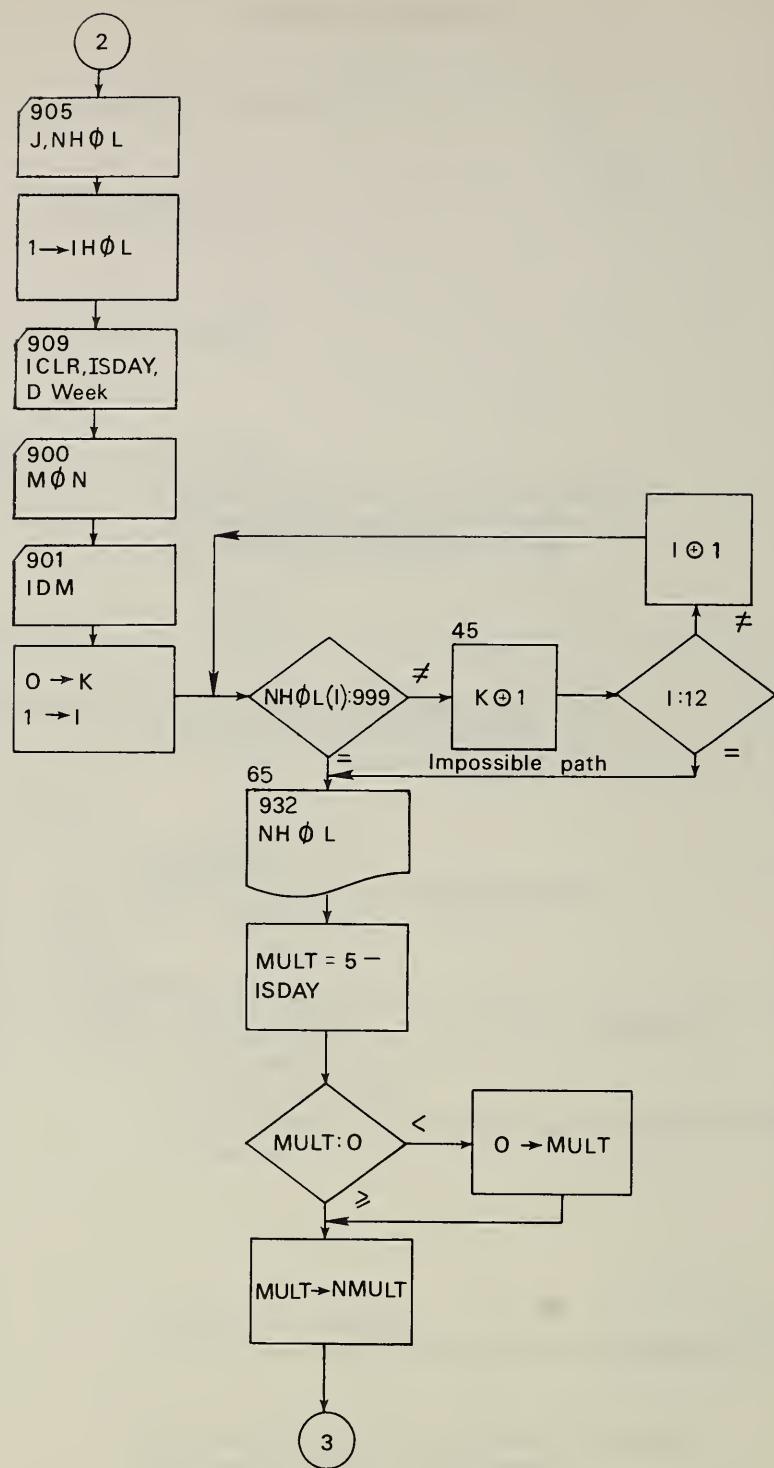


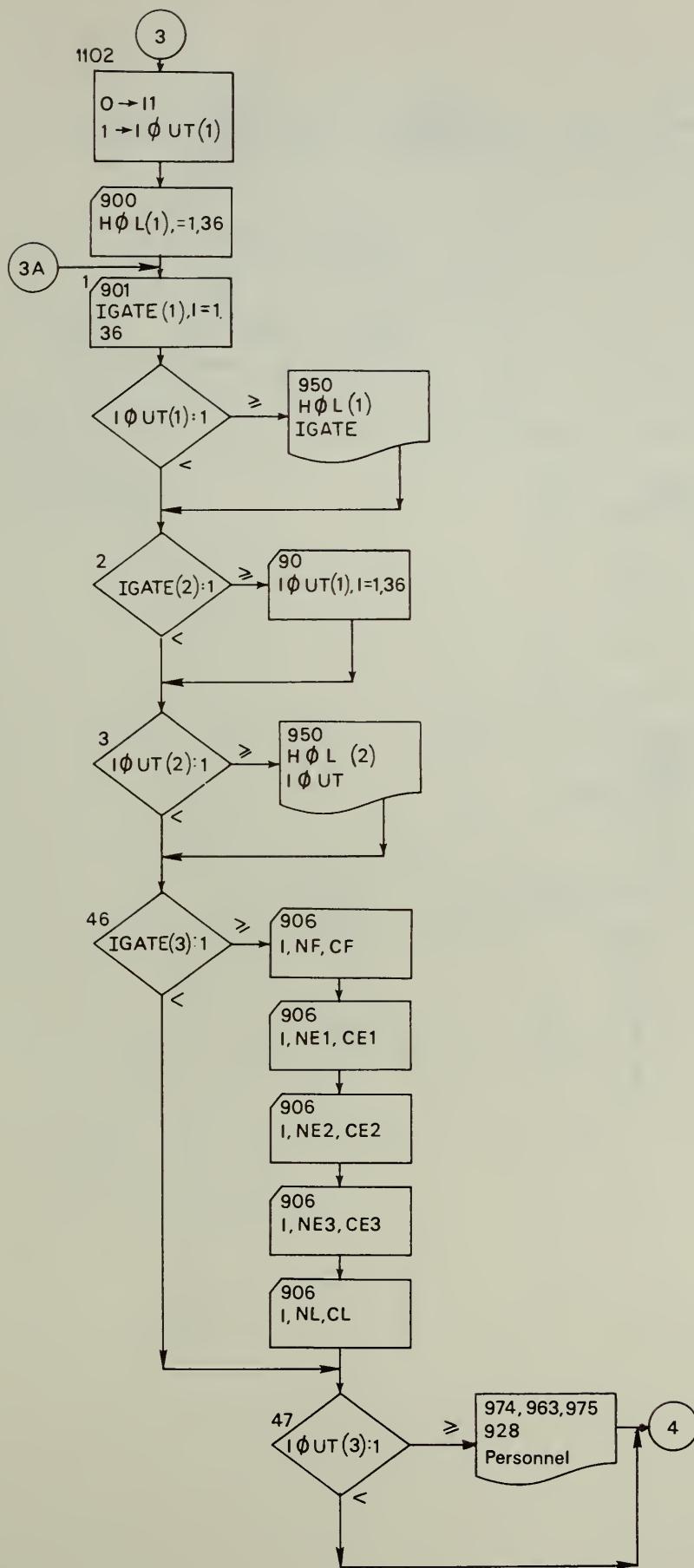
Subroutine call indication

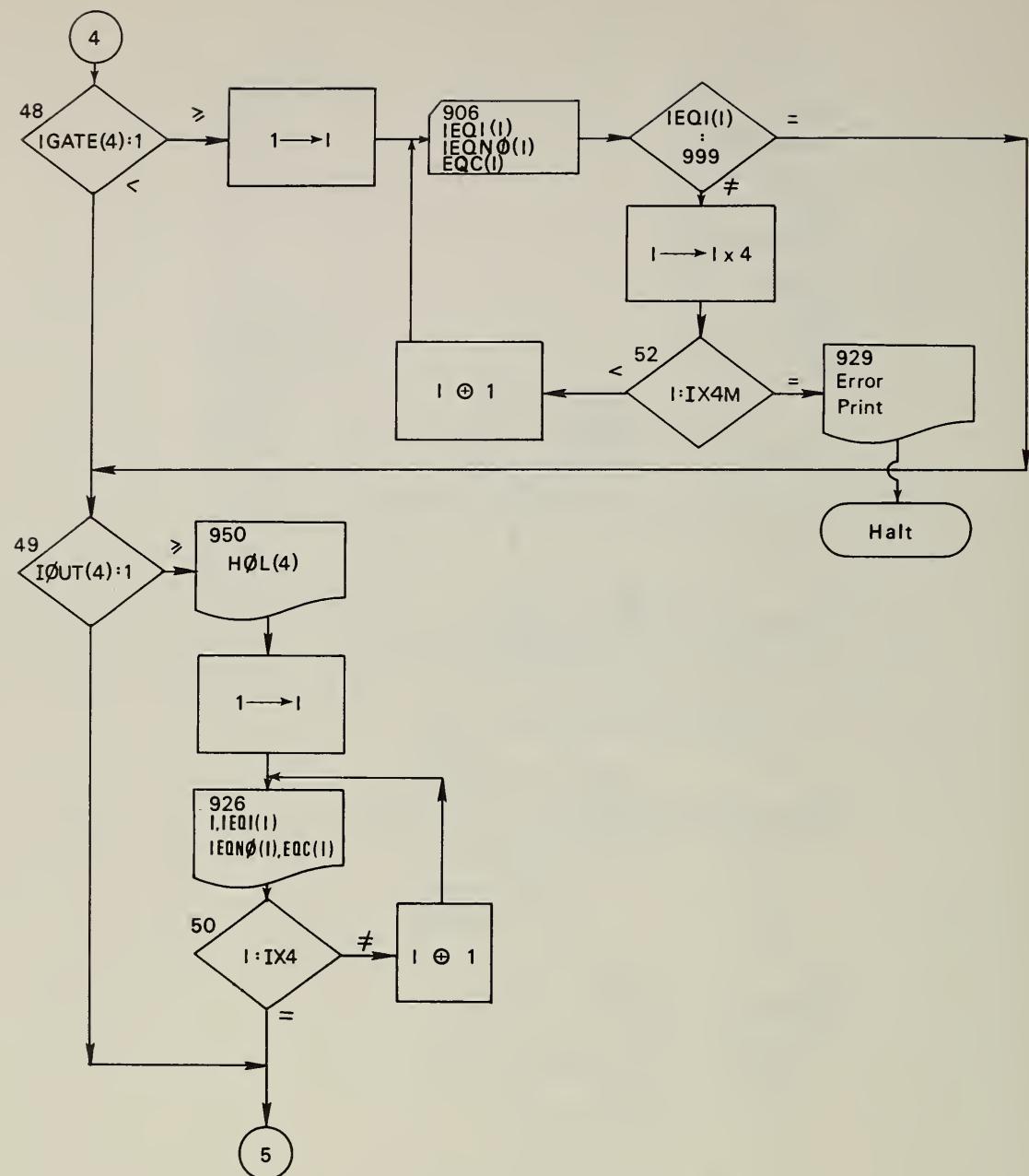
Subroutine A is entered and control is returned to A1

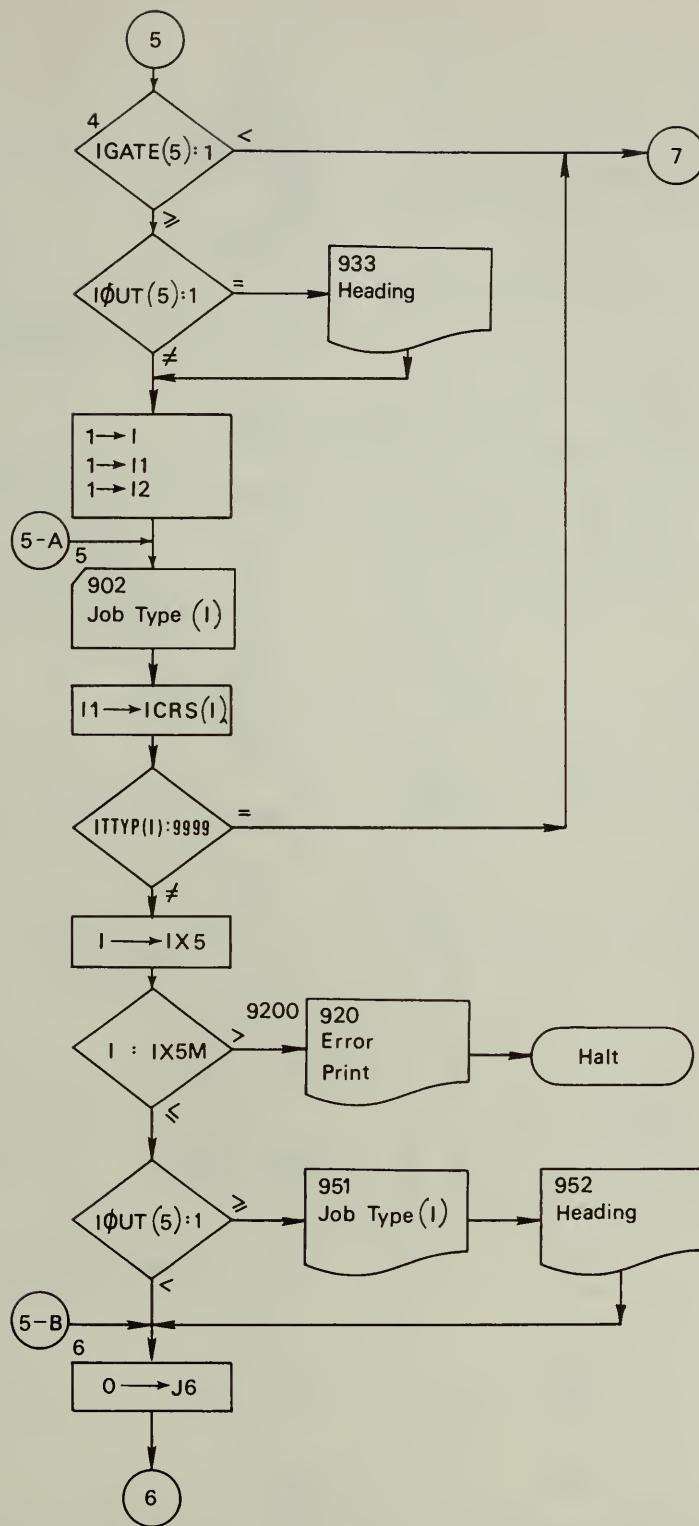
Variables beginning with A-H and Ø-Z are real;
 those beginning with I-N are integer

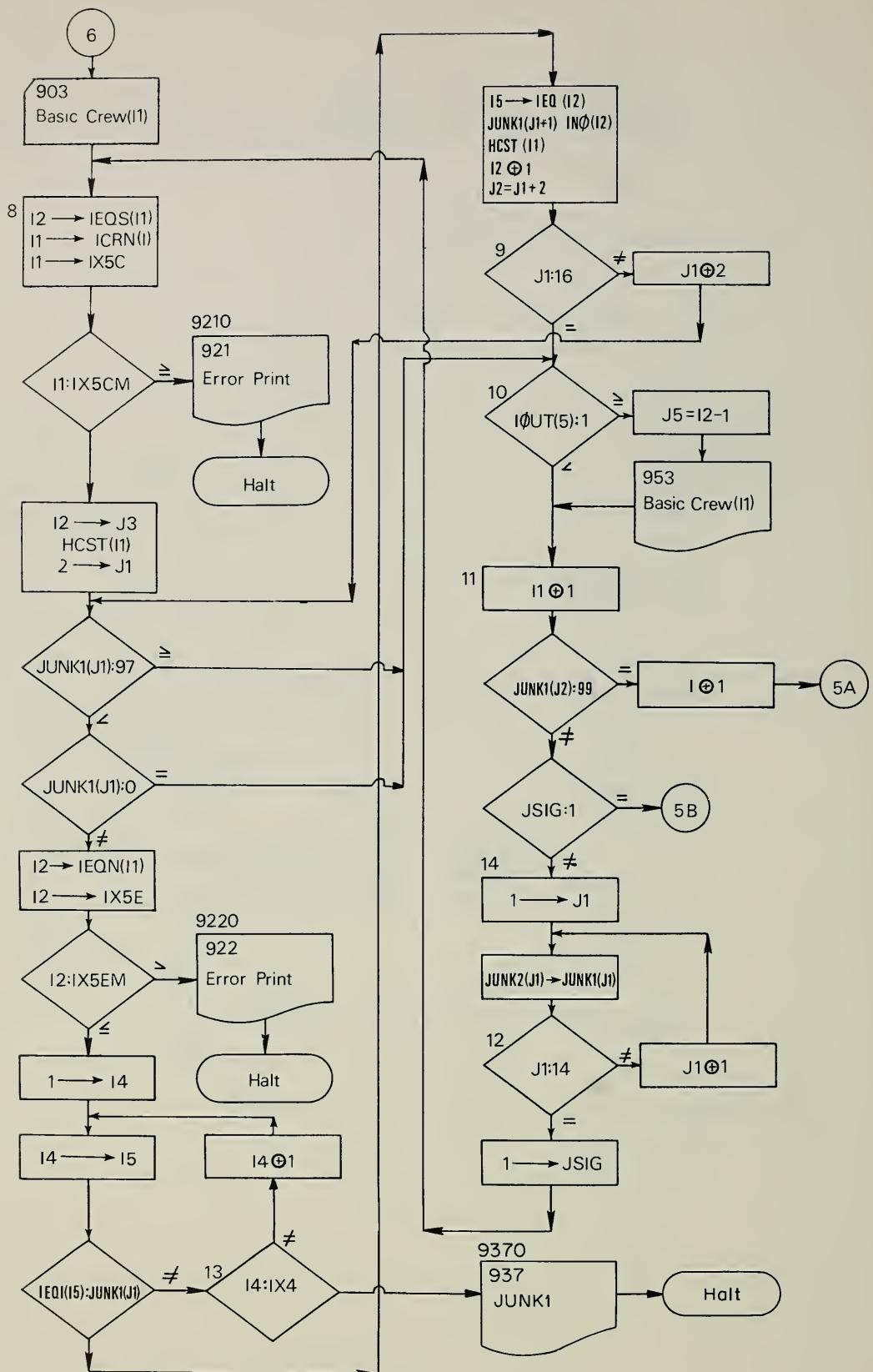


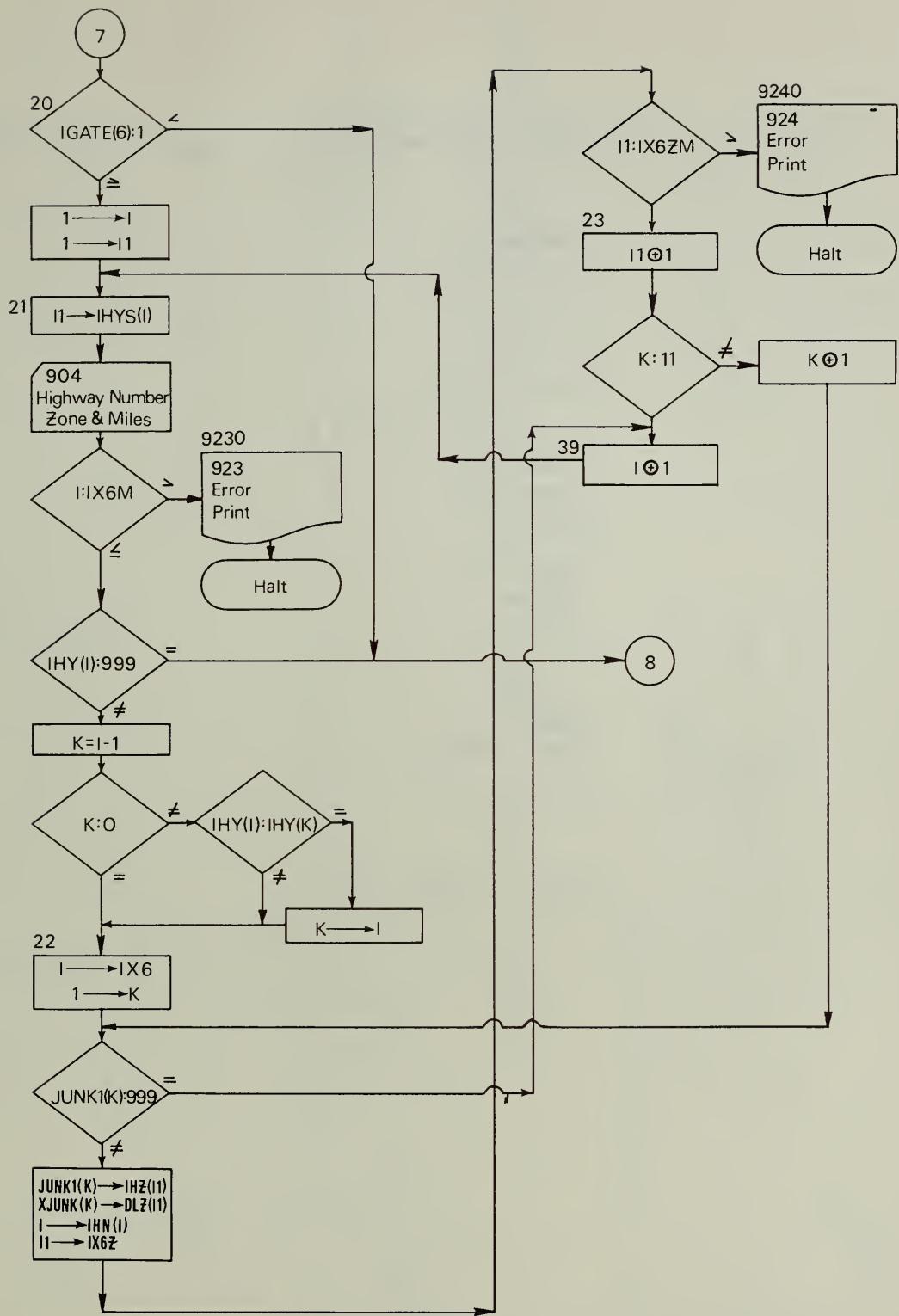


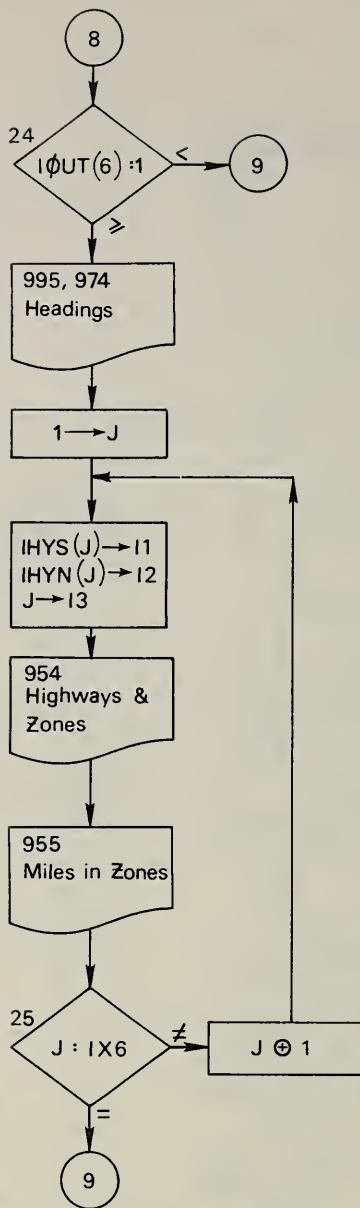


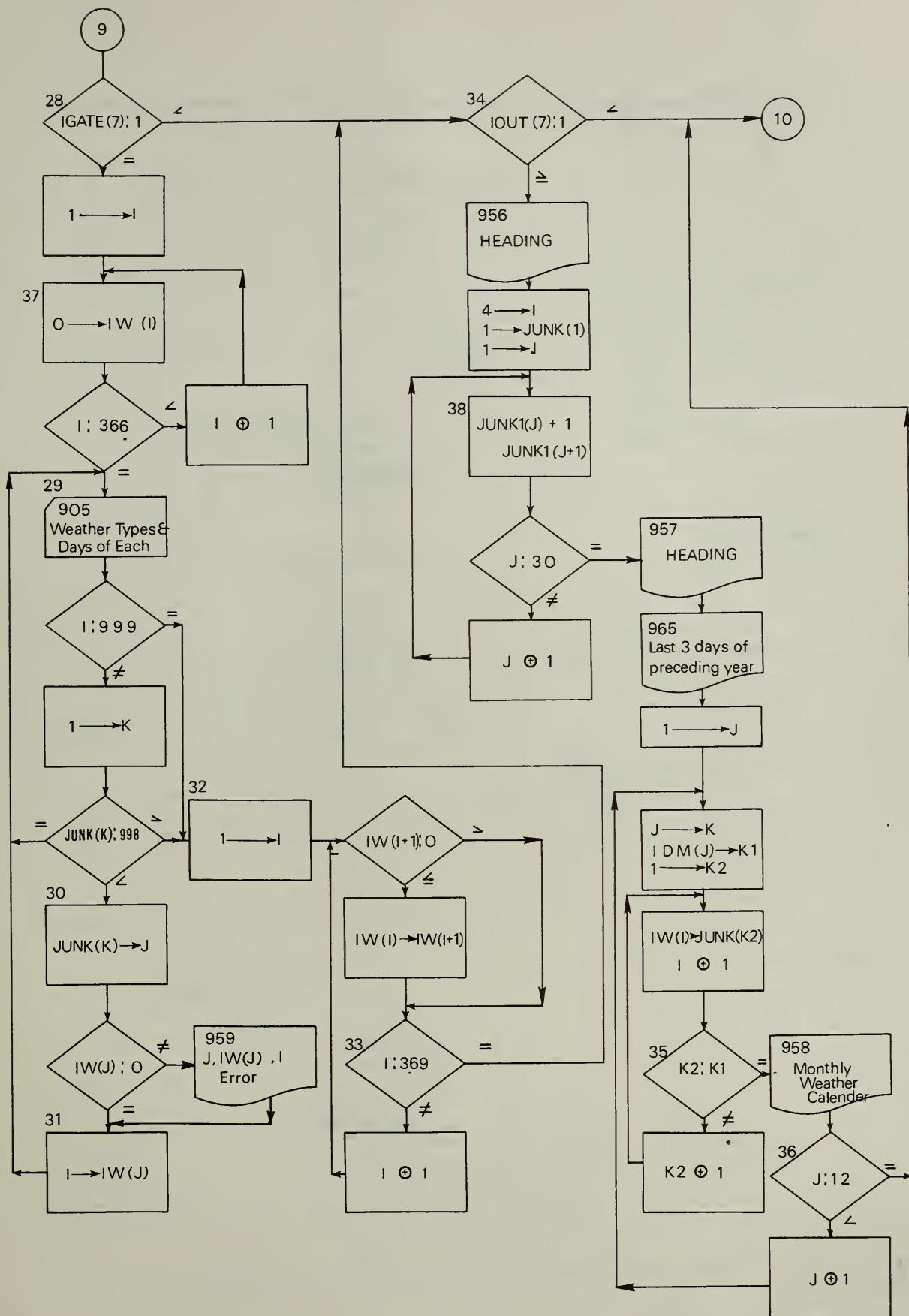


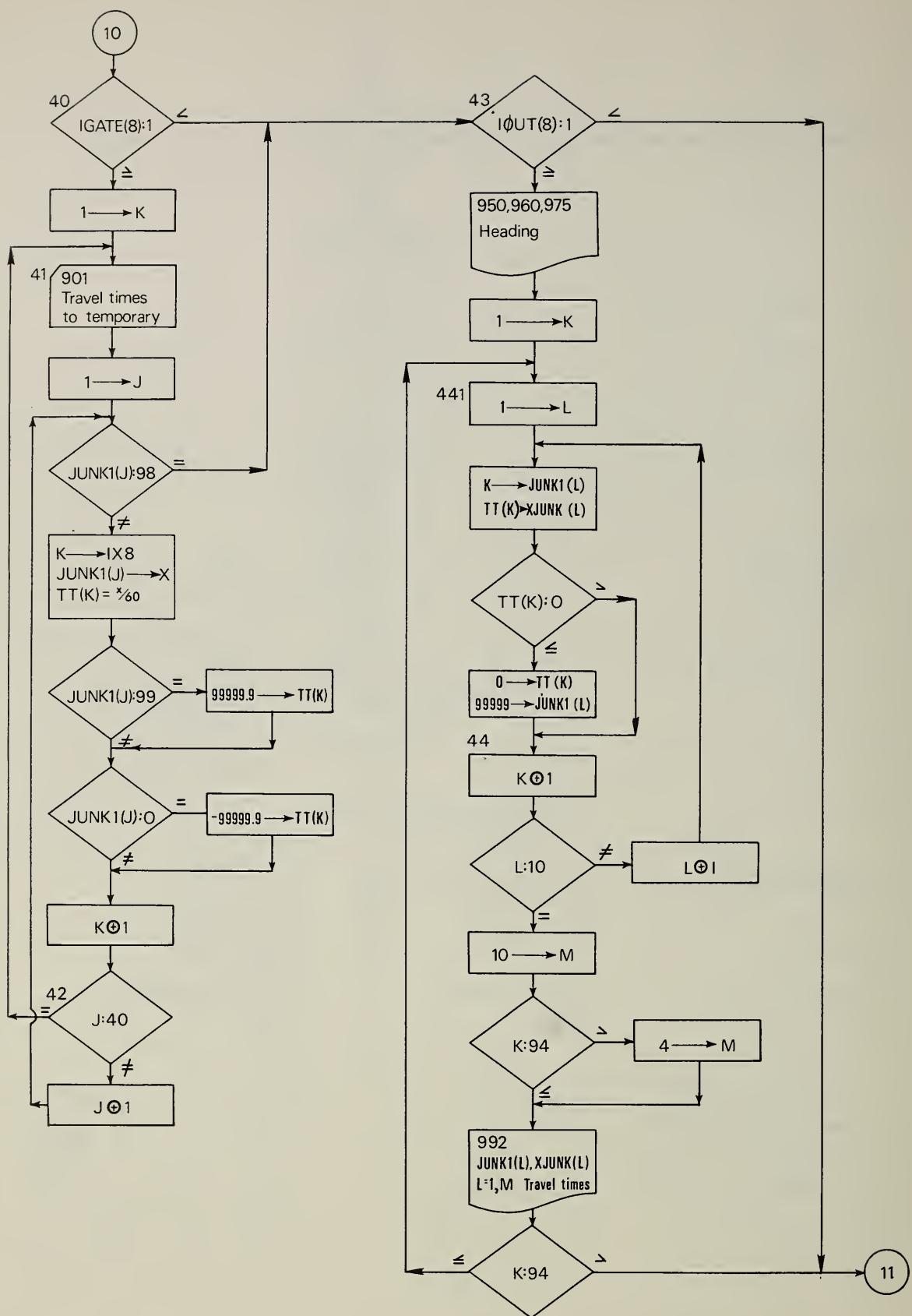


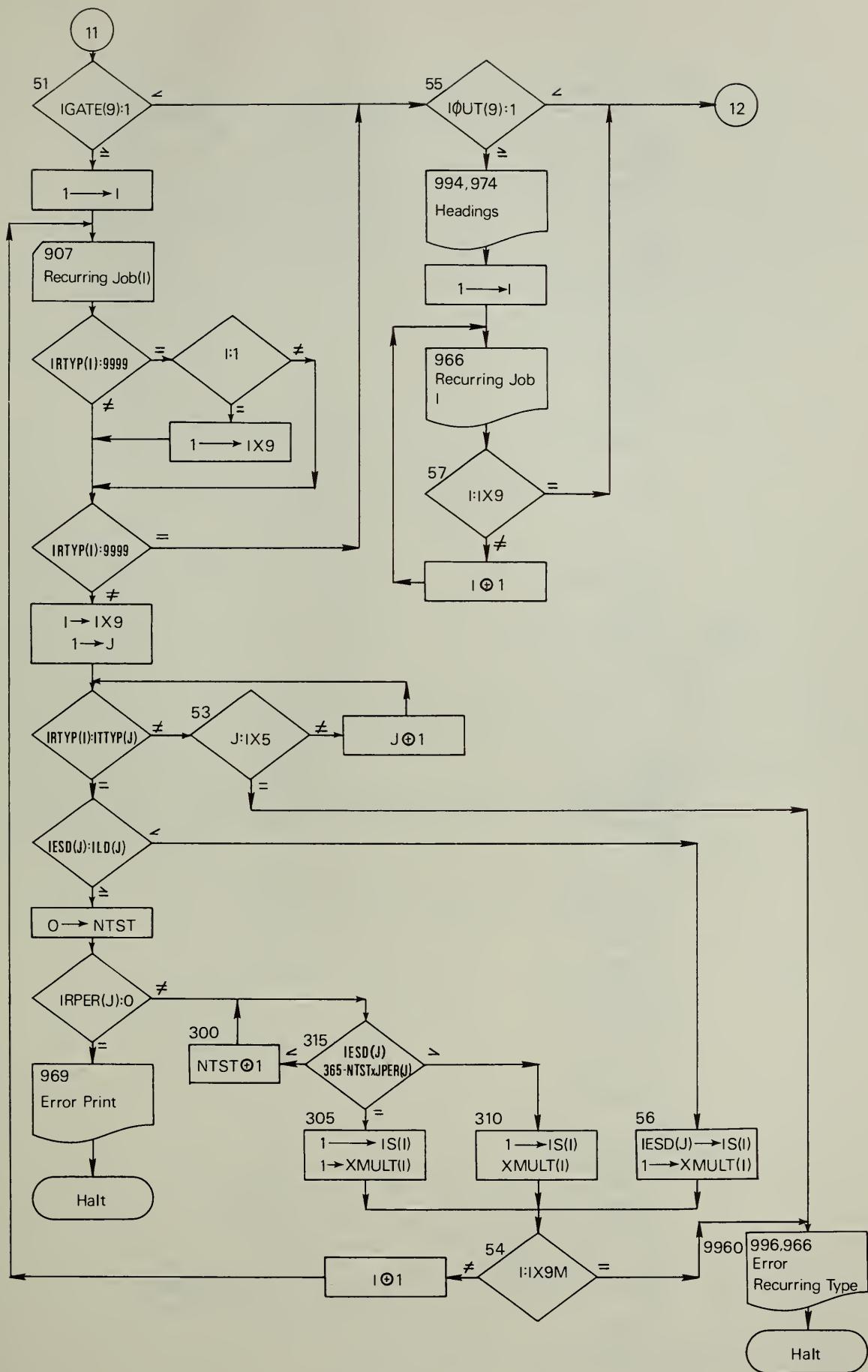


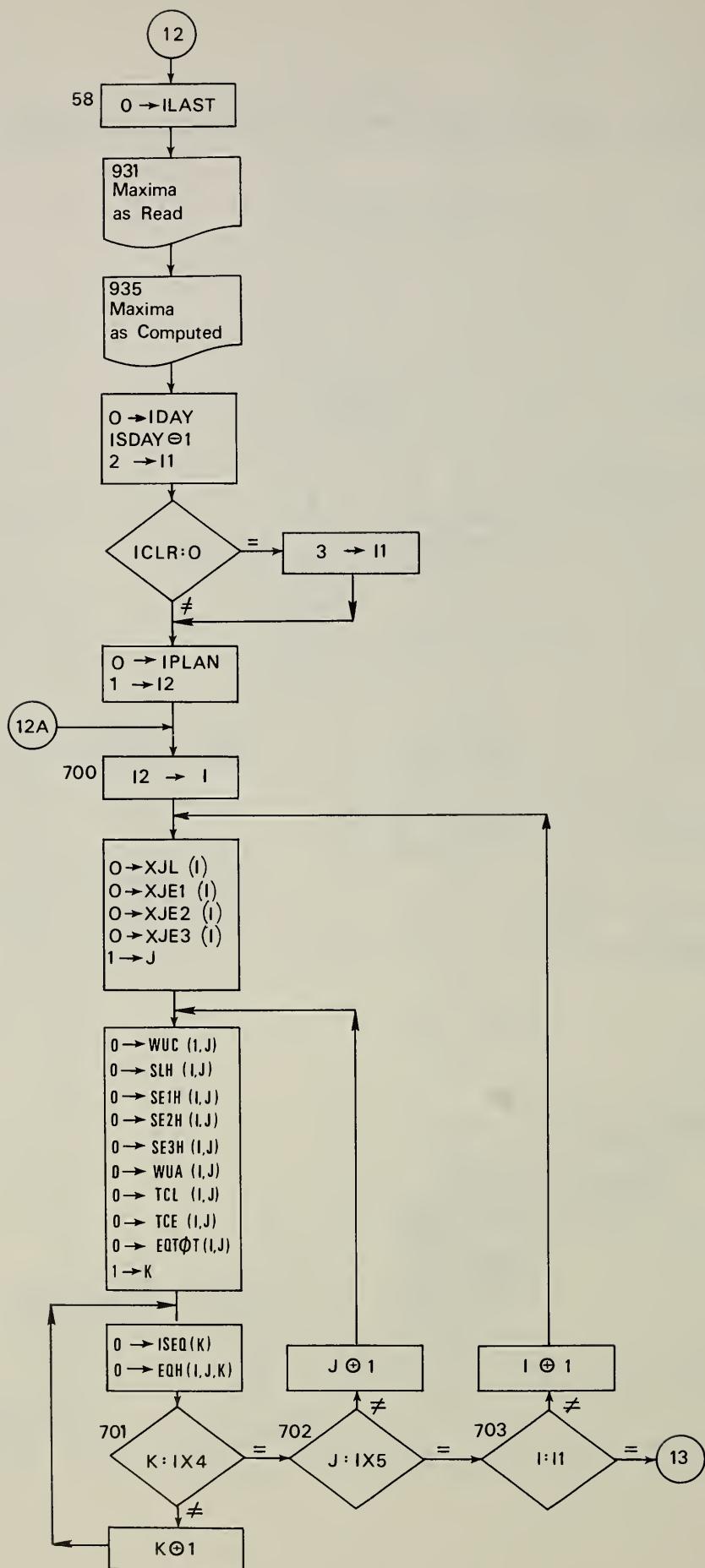


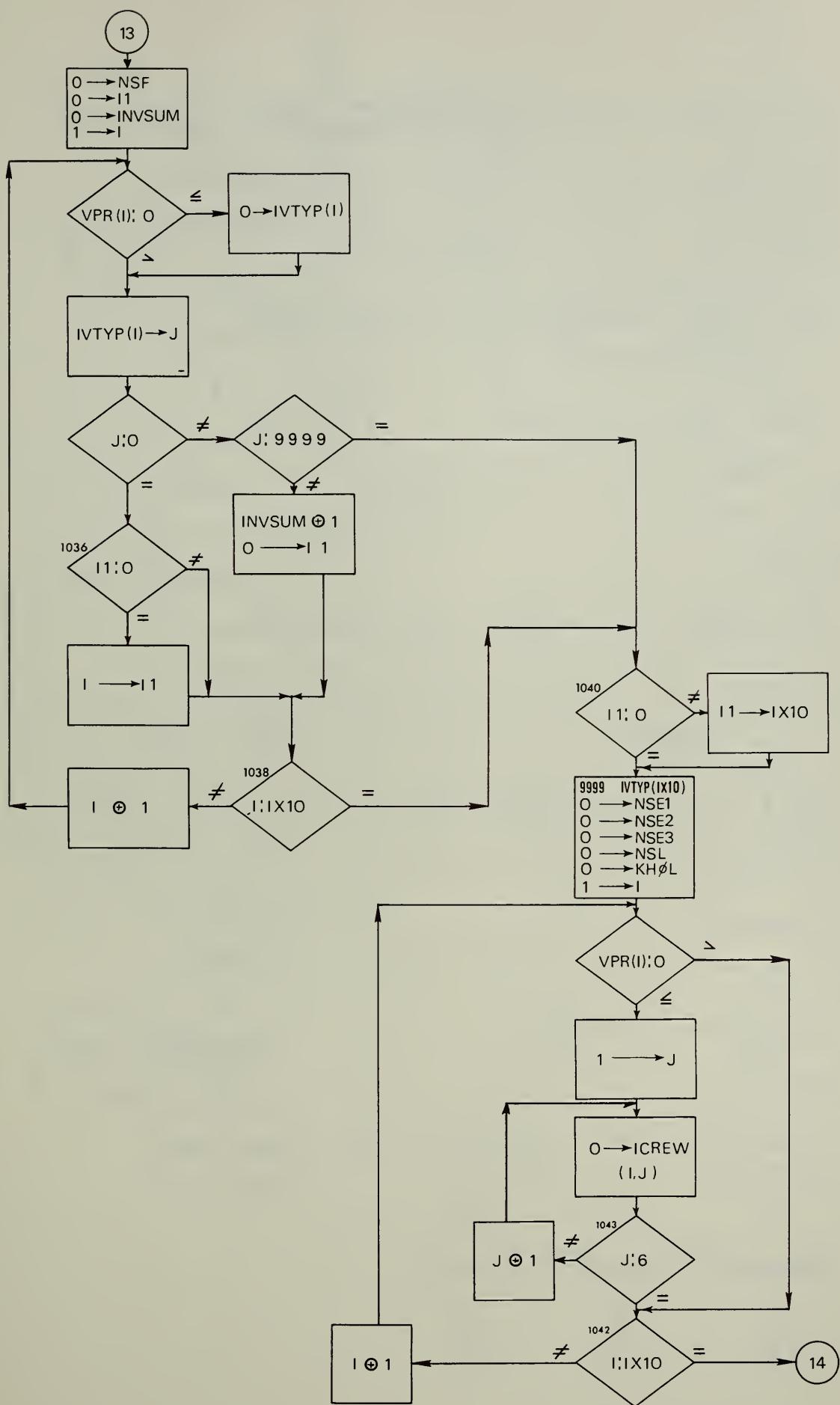


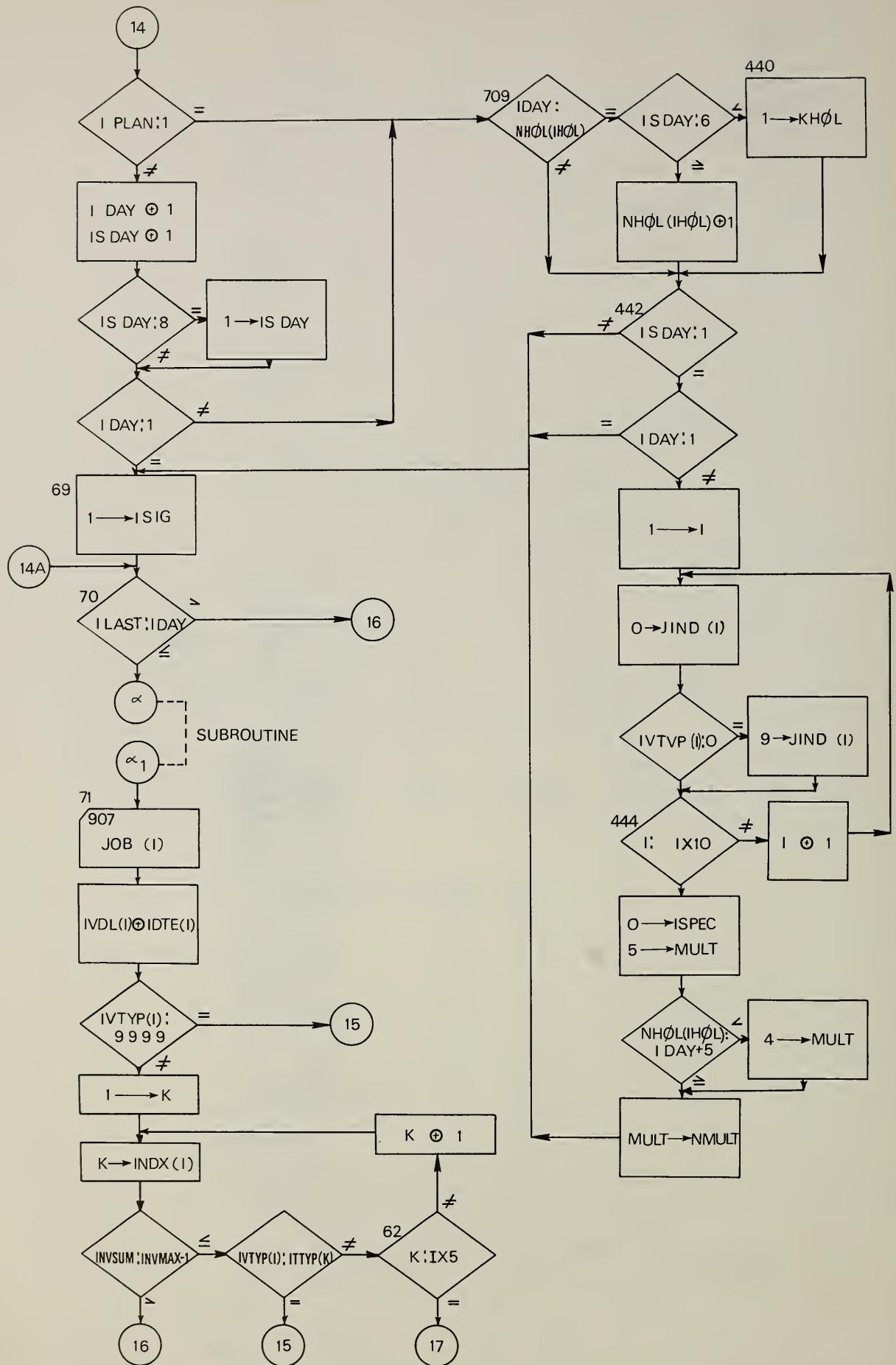


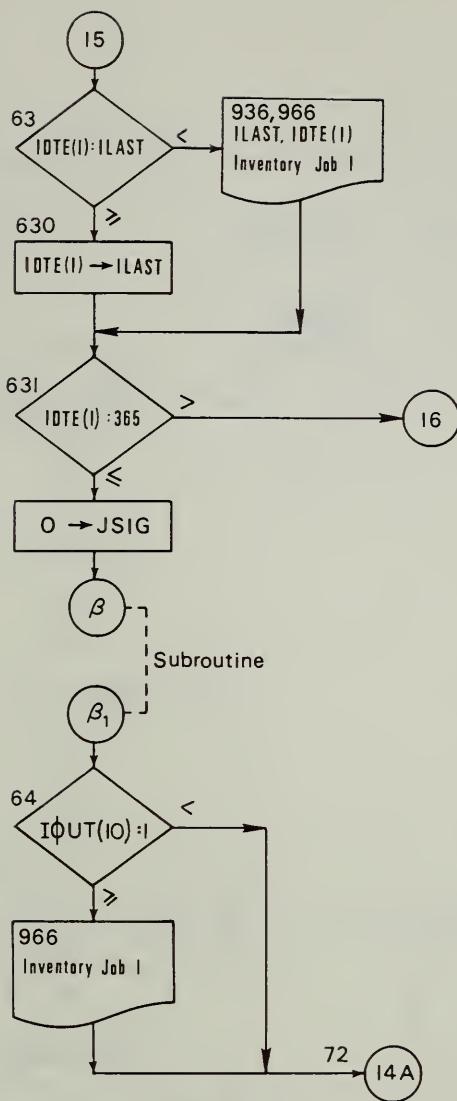


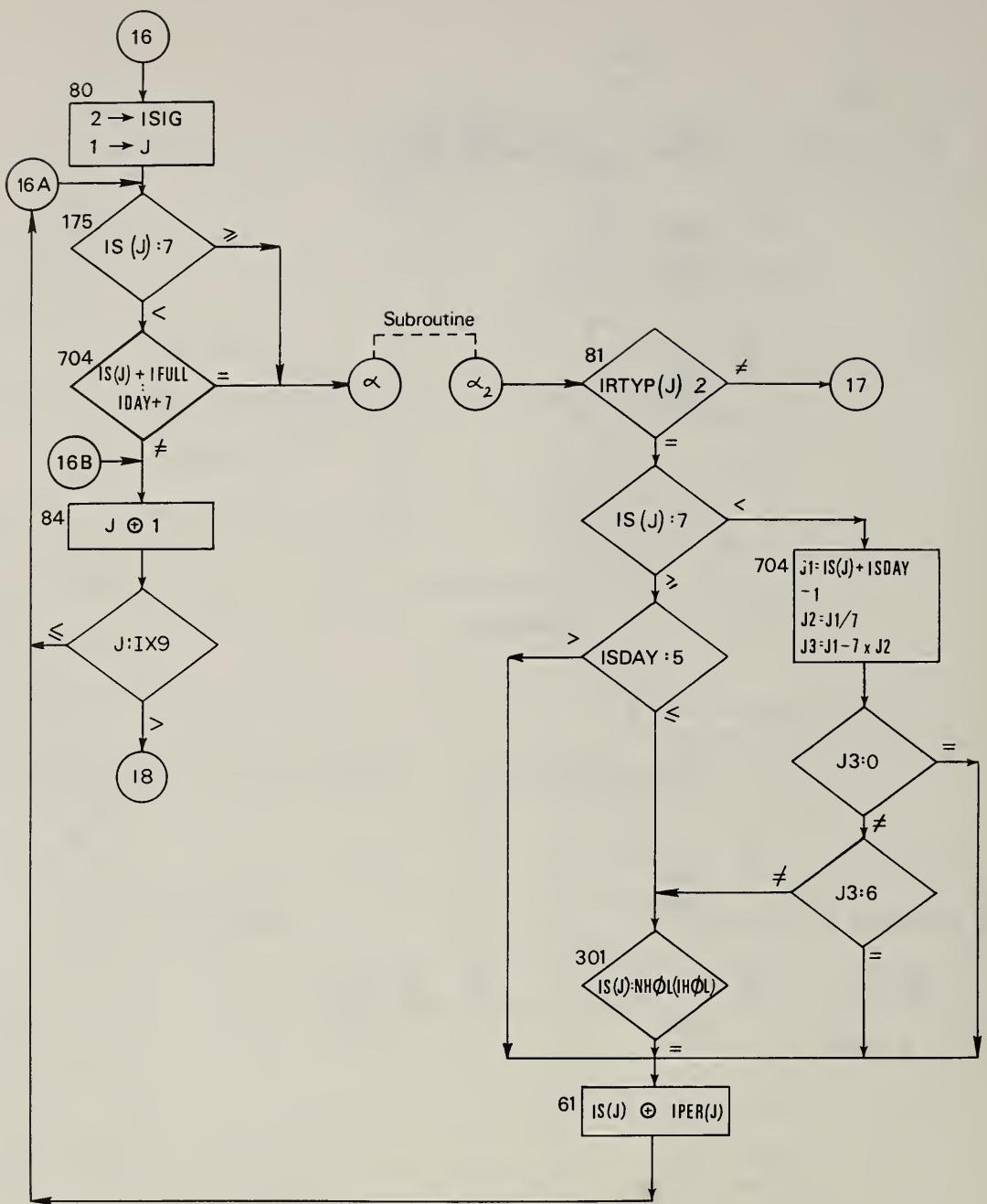


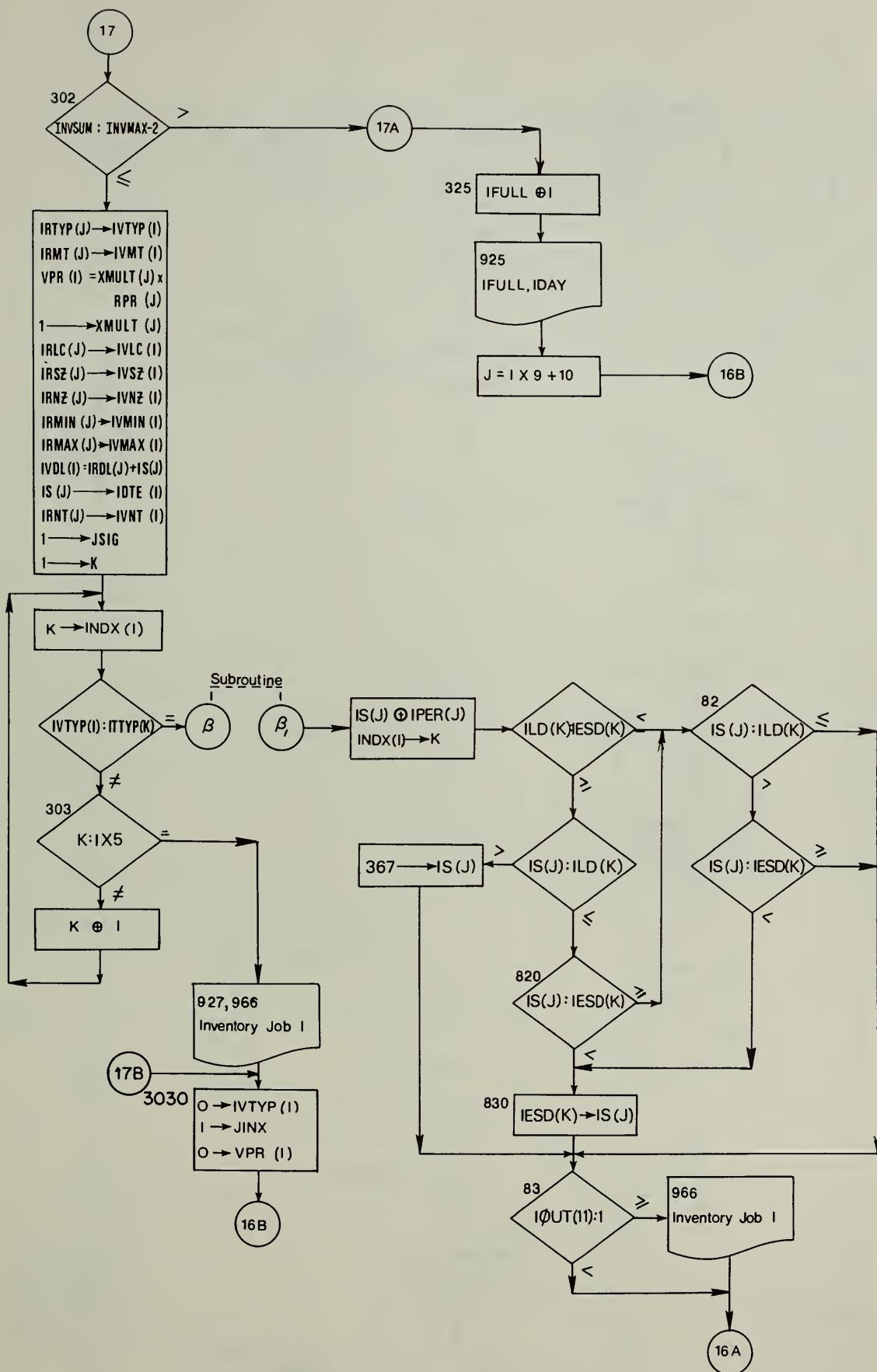


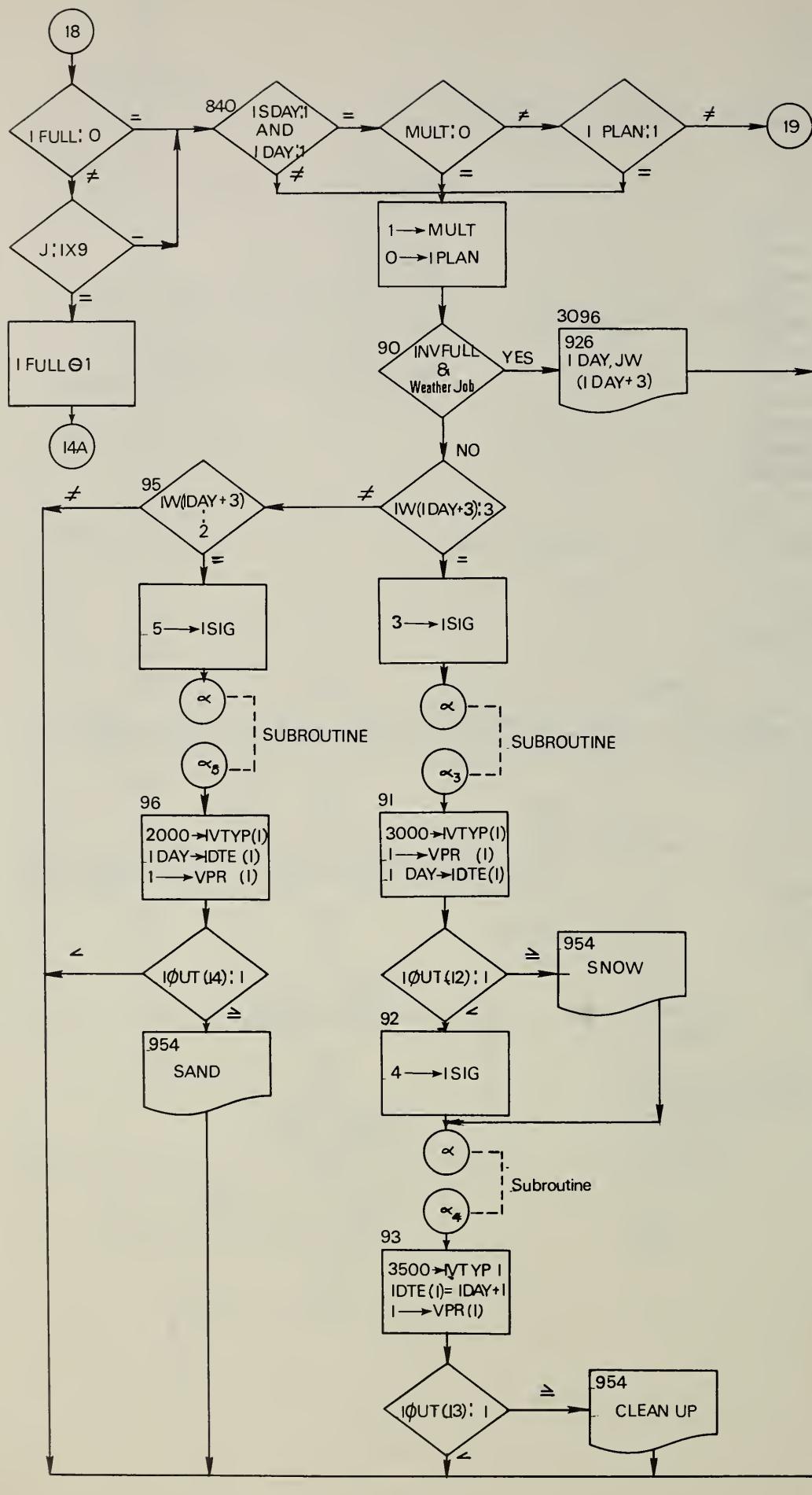


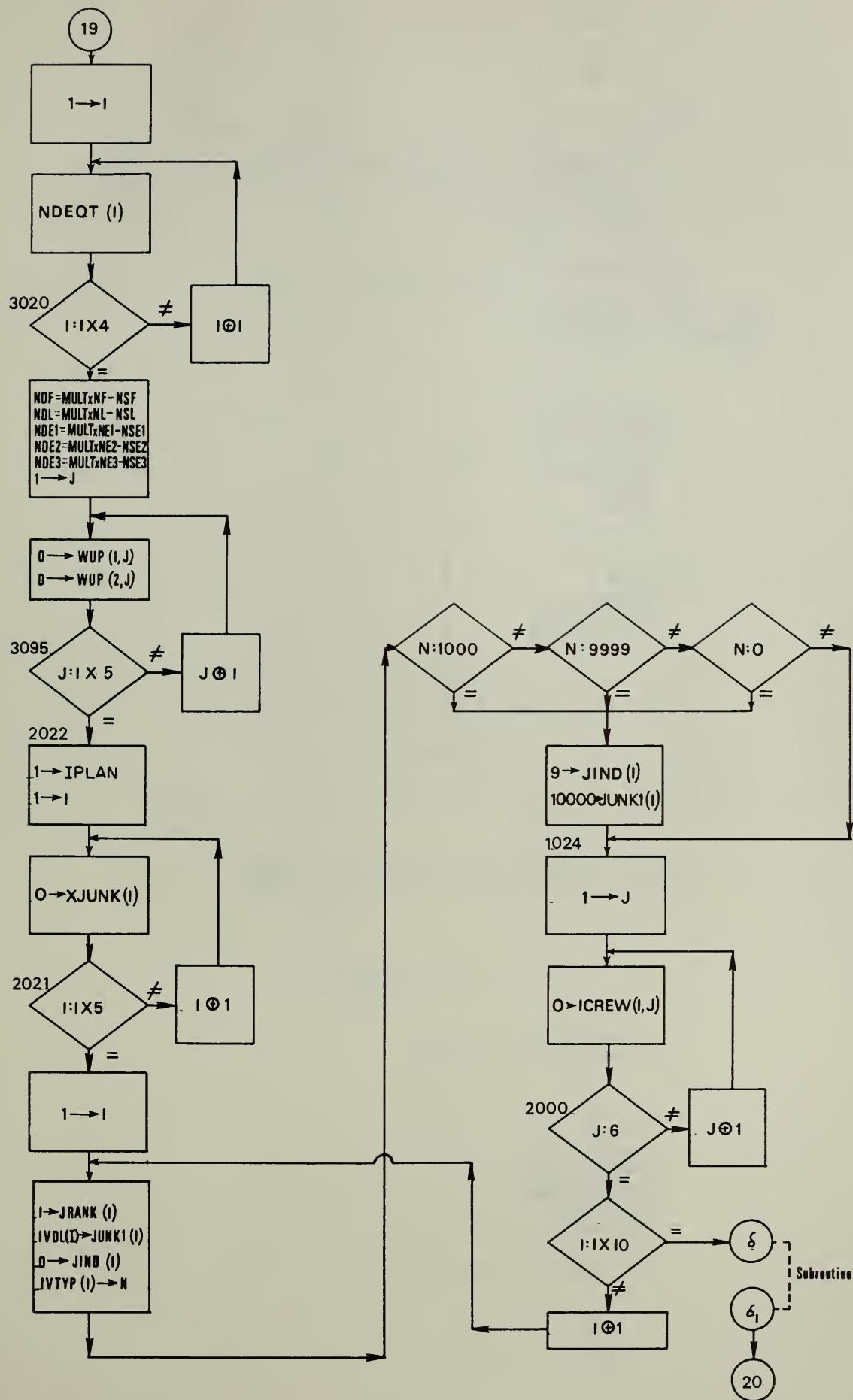


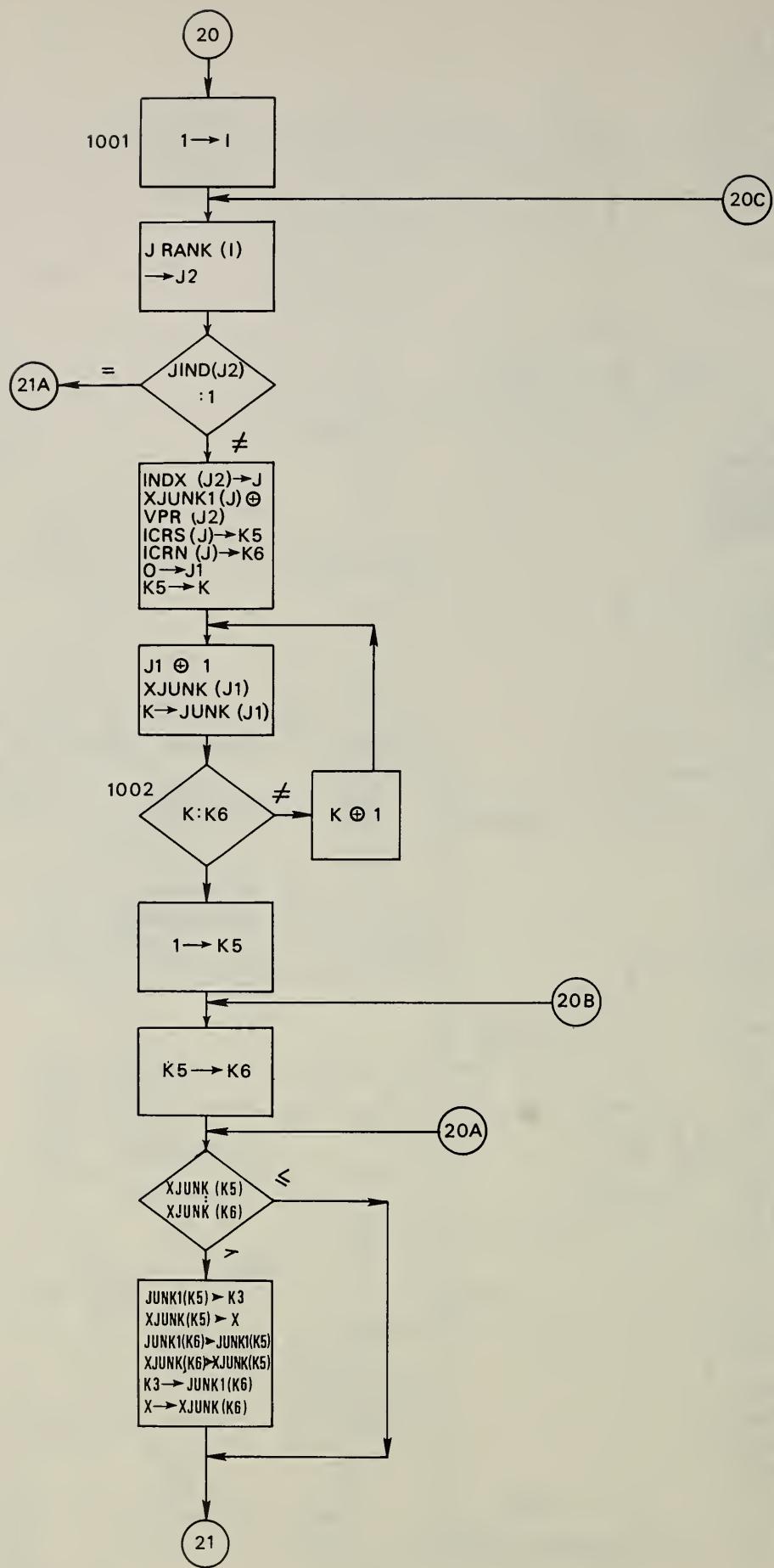


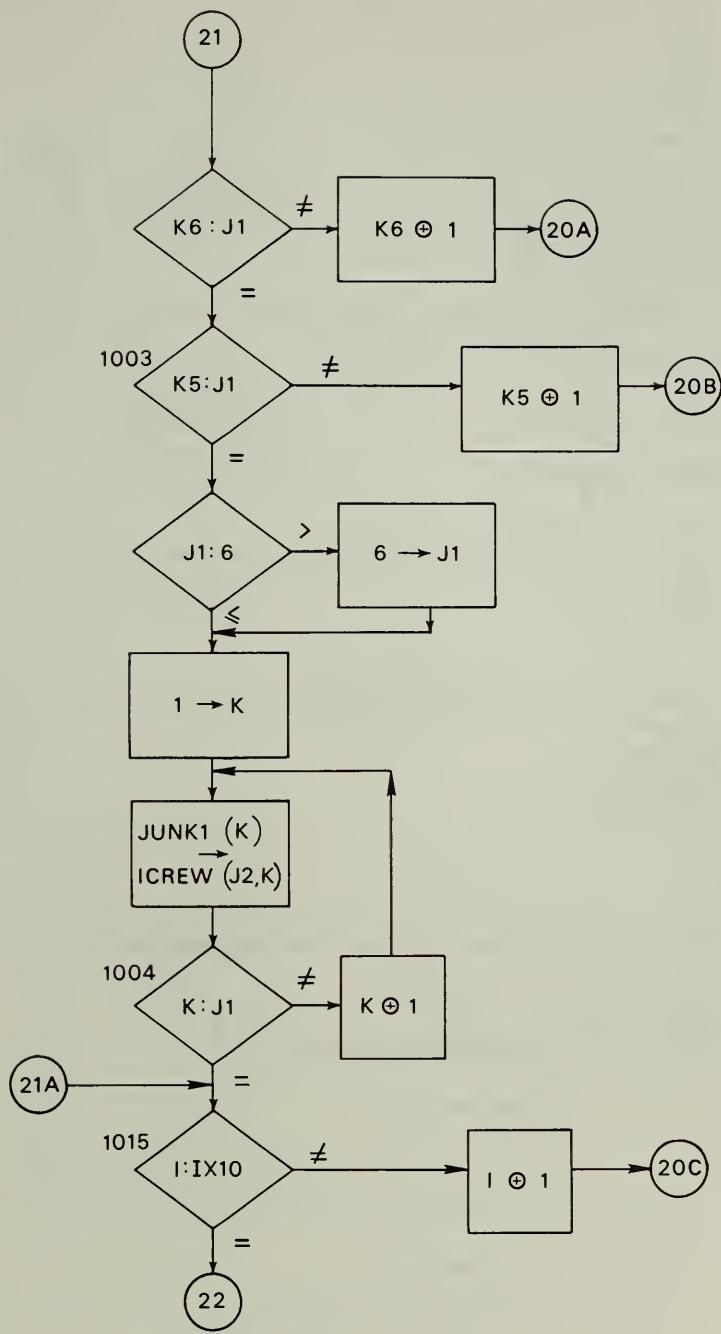


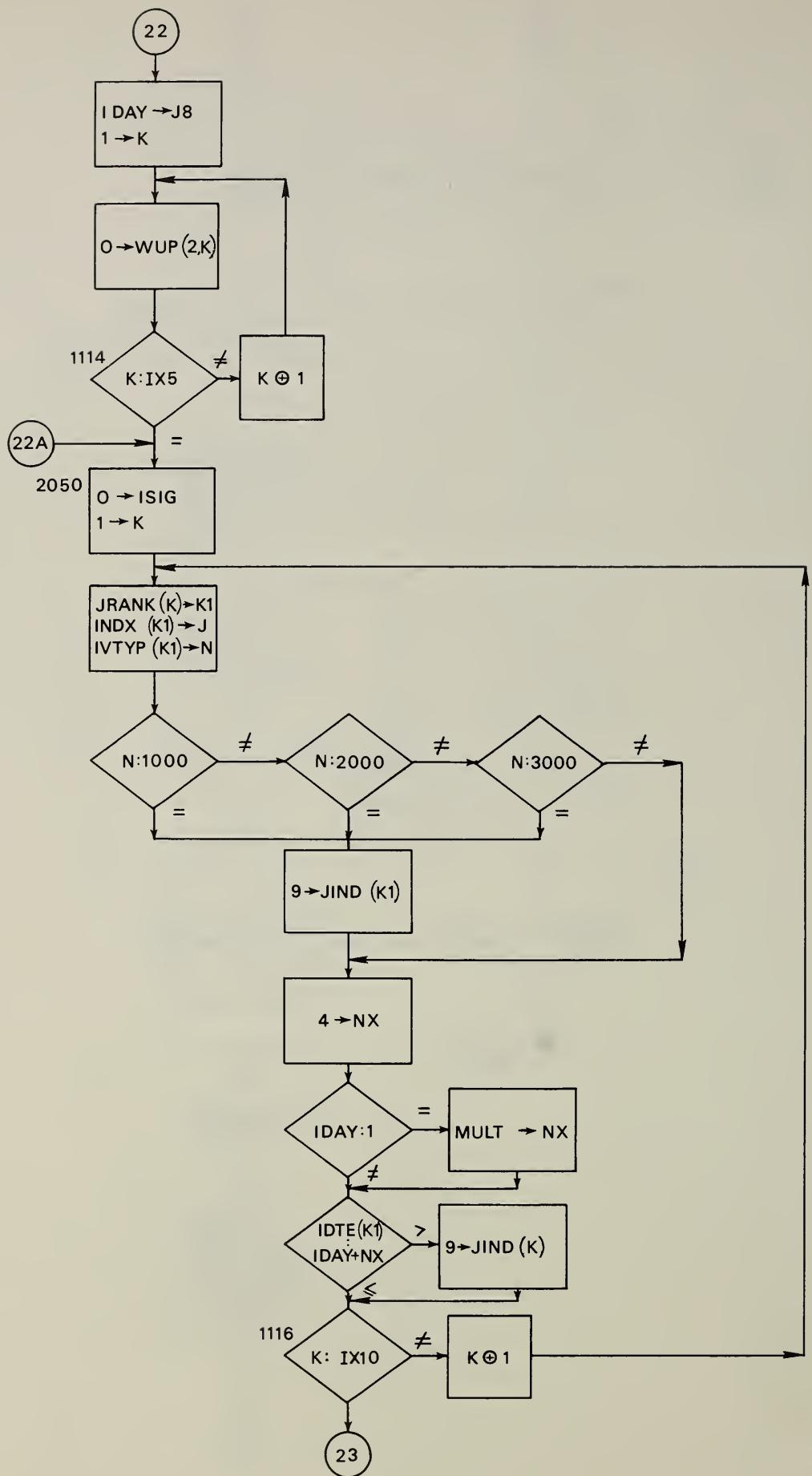


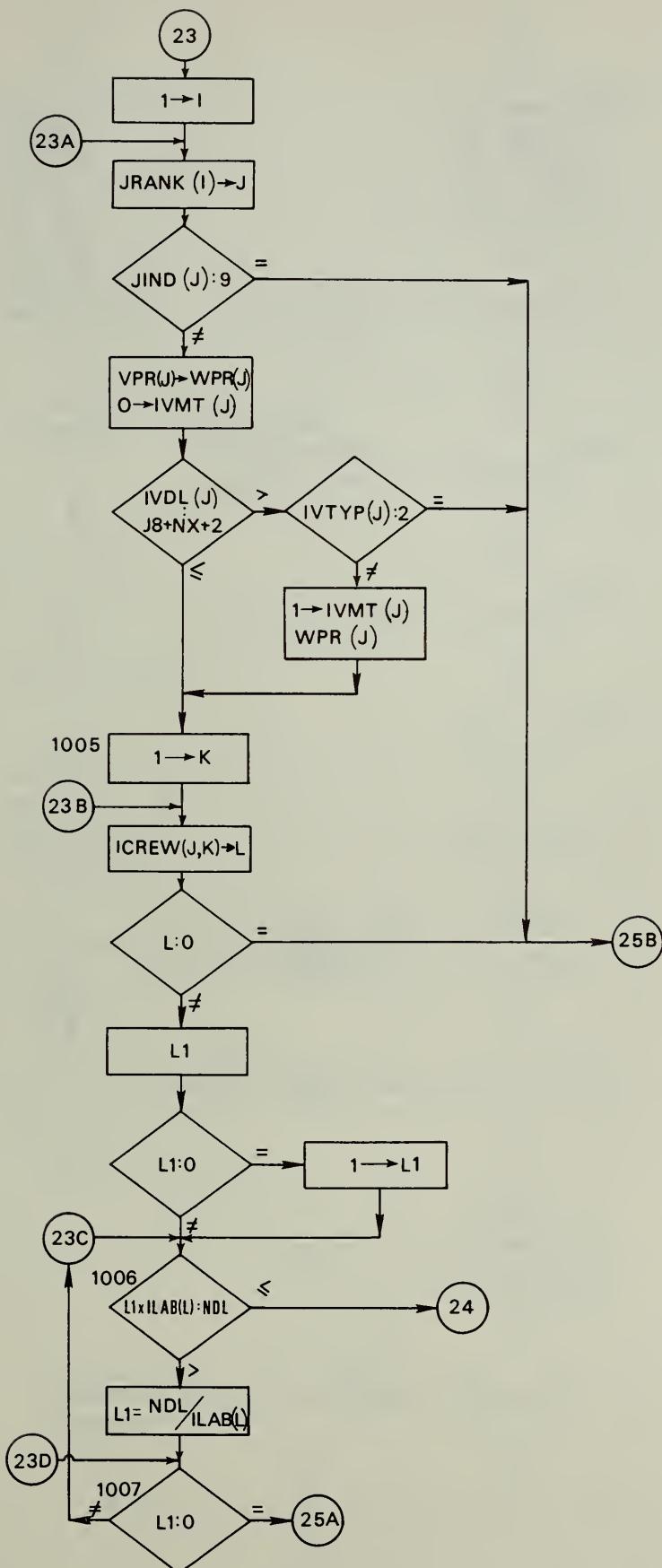


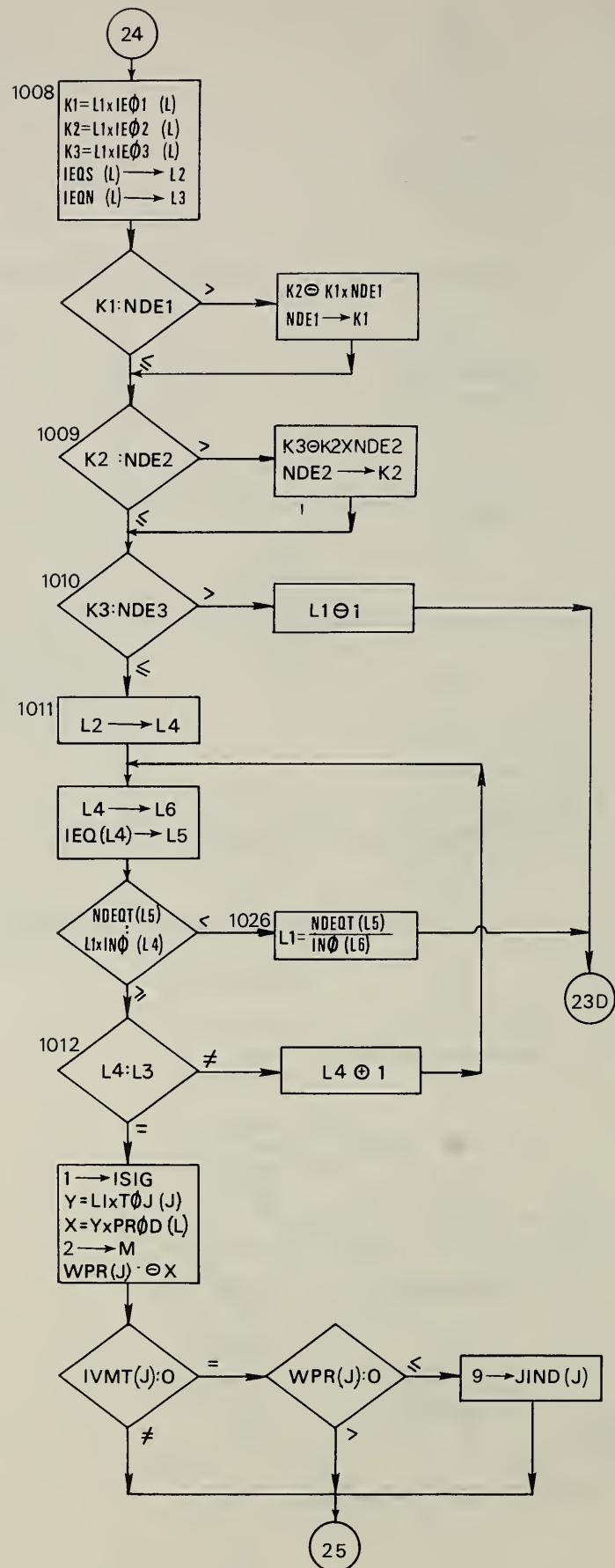


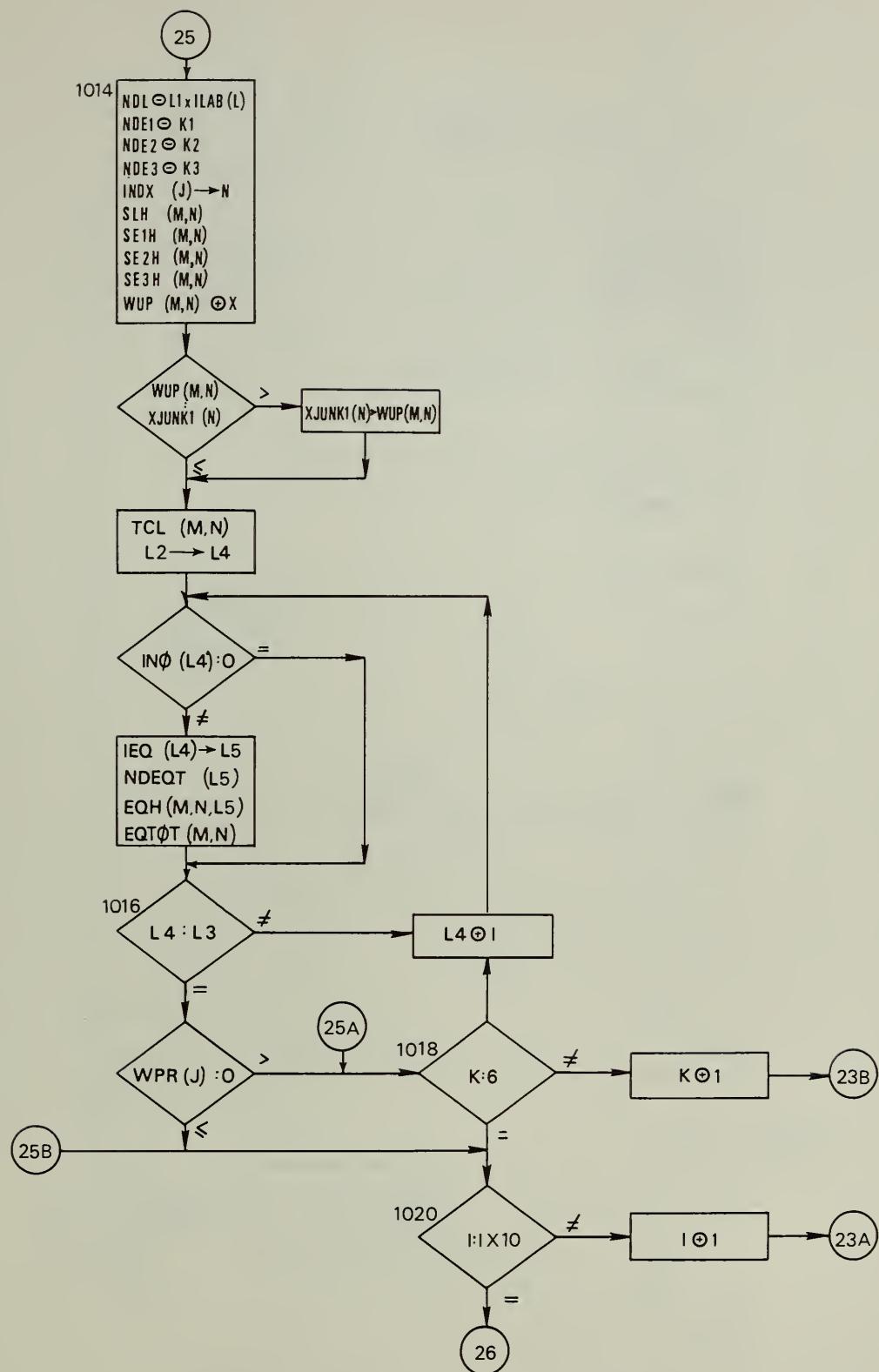


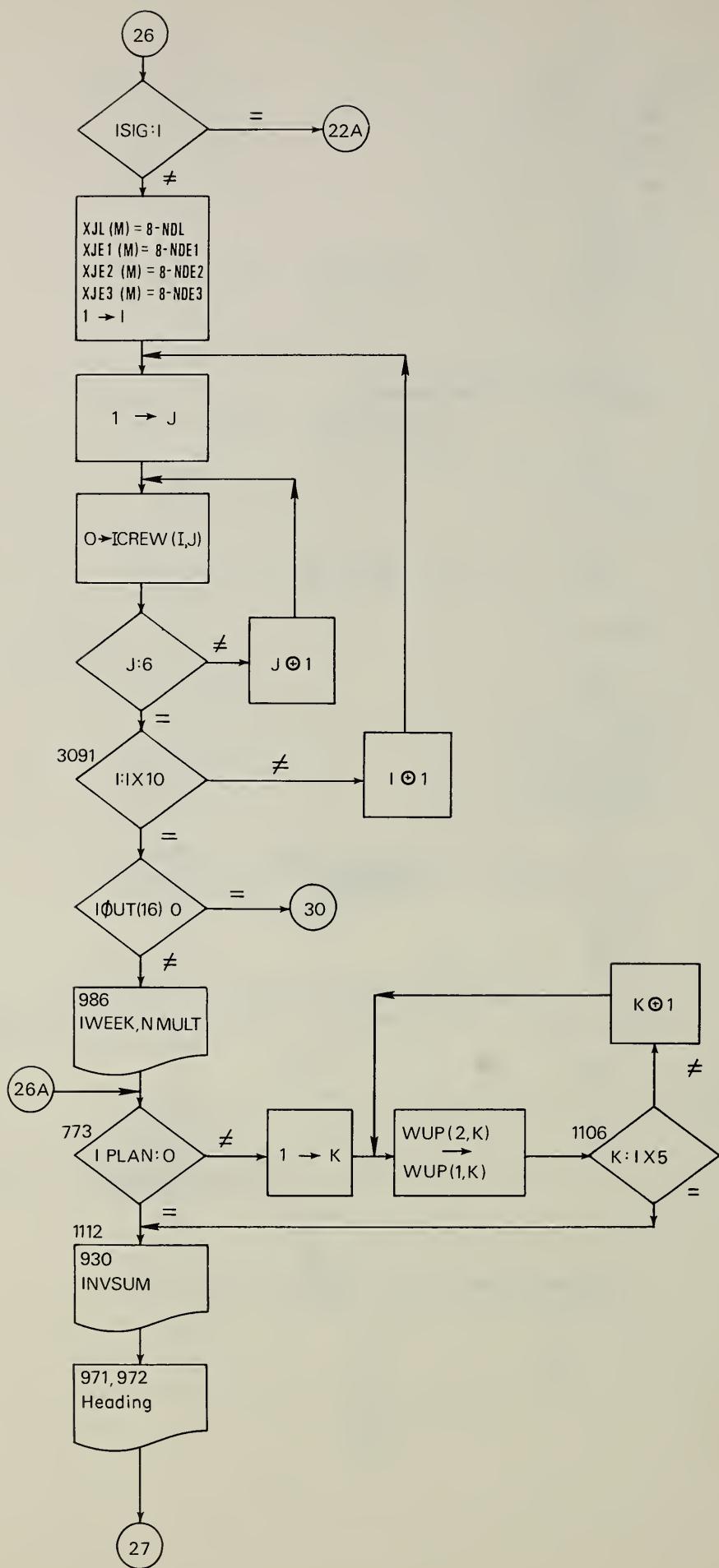


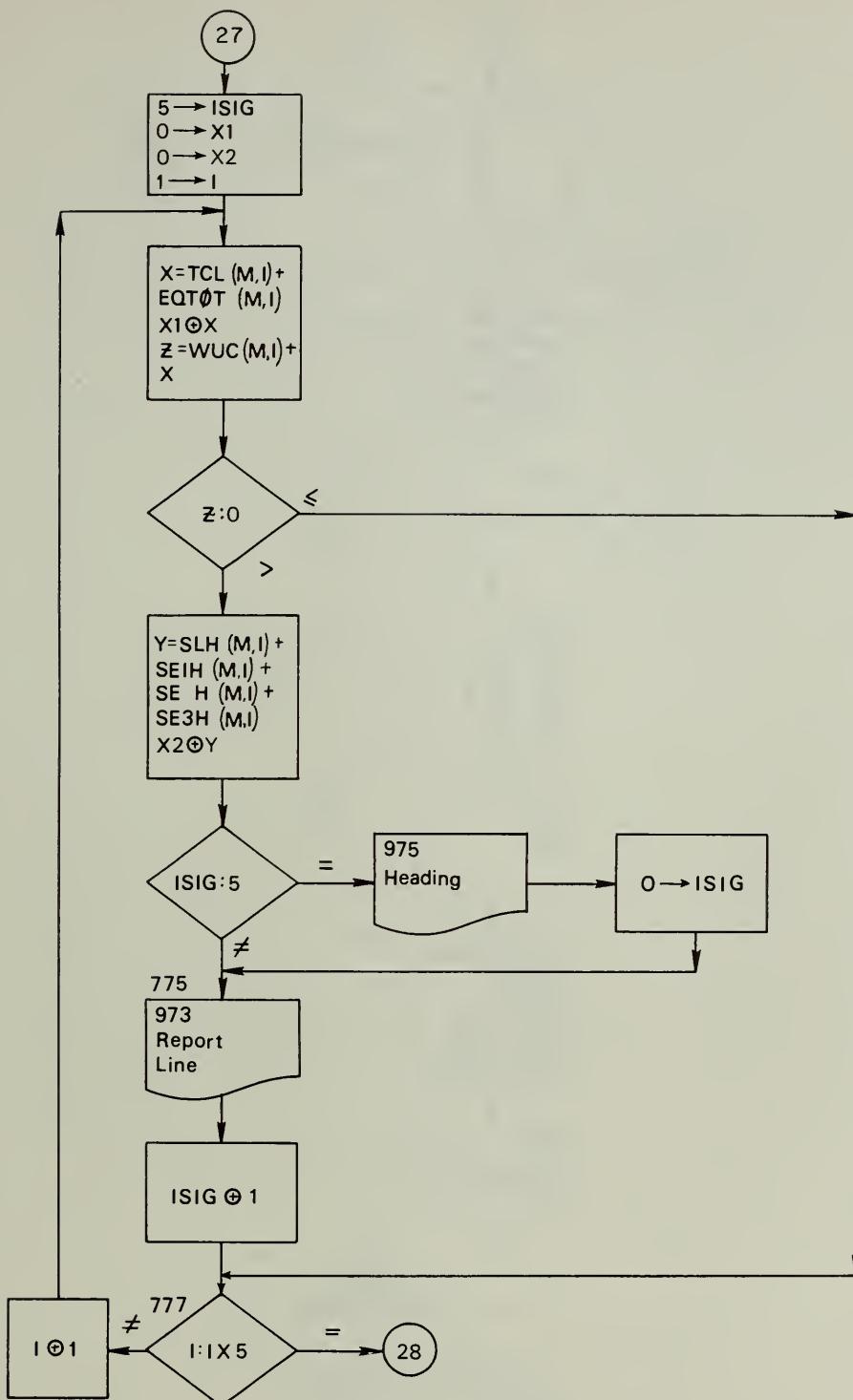


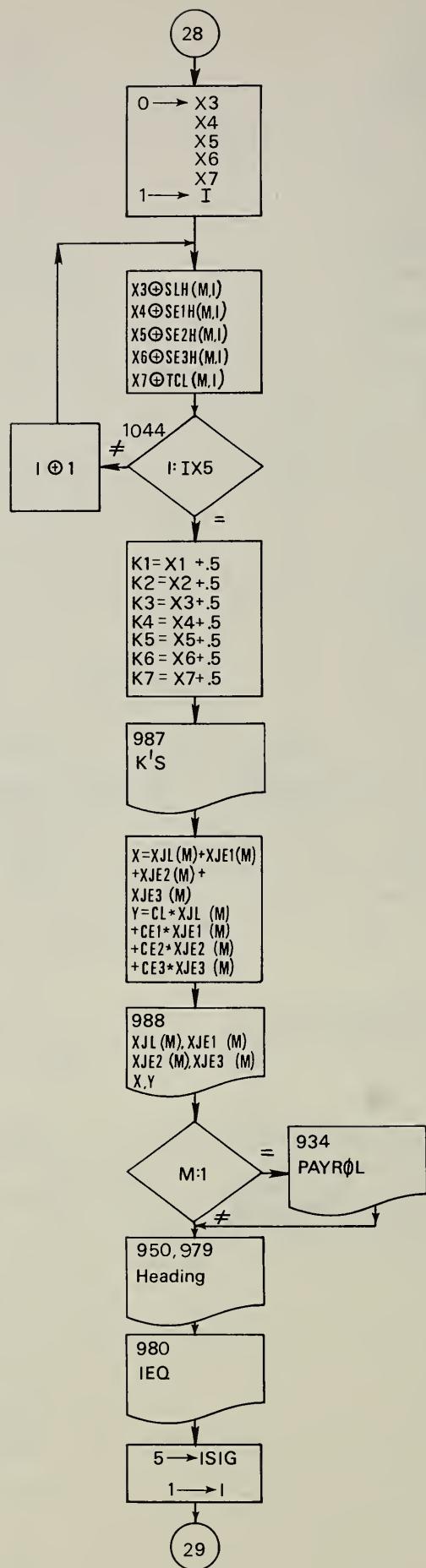


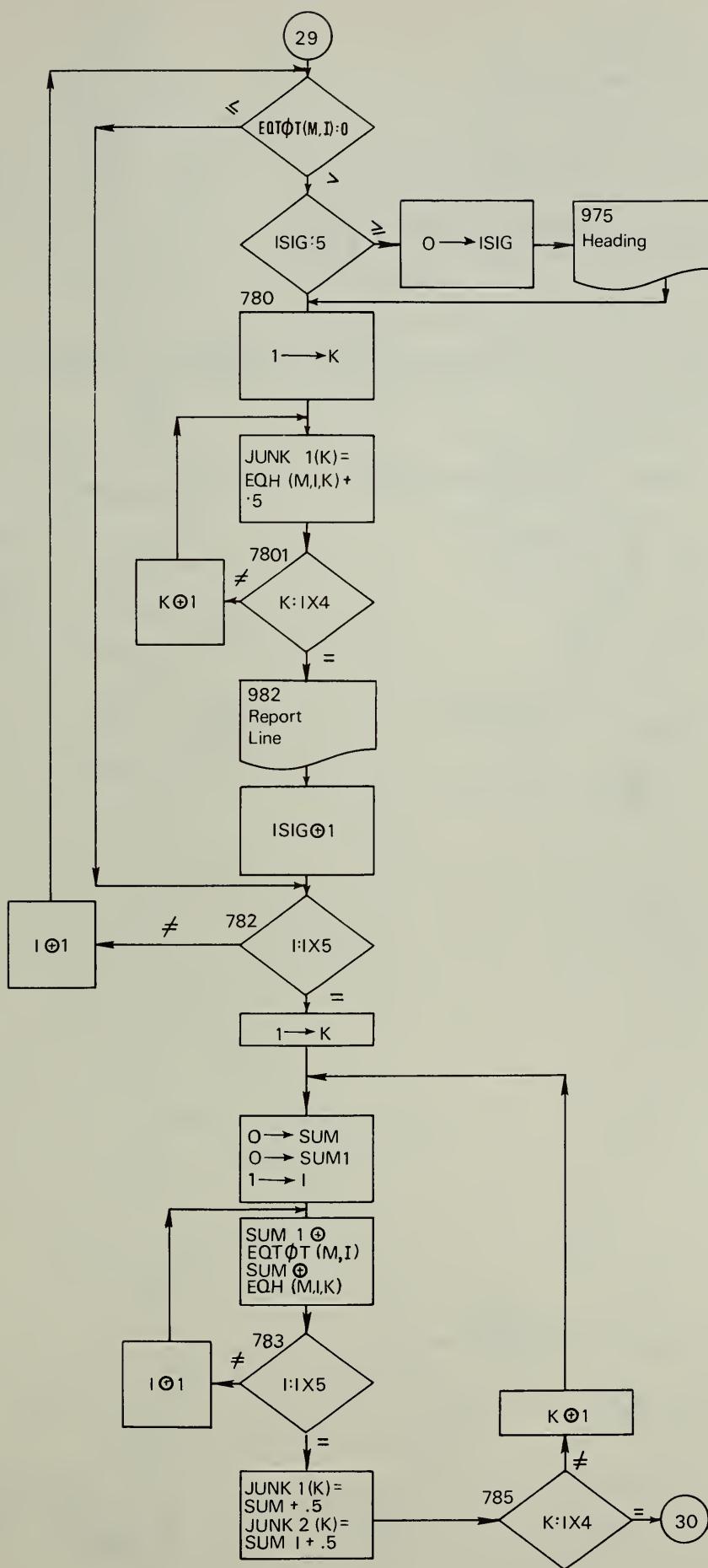


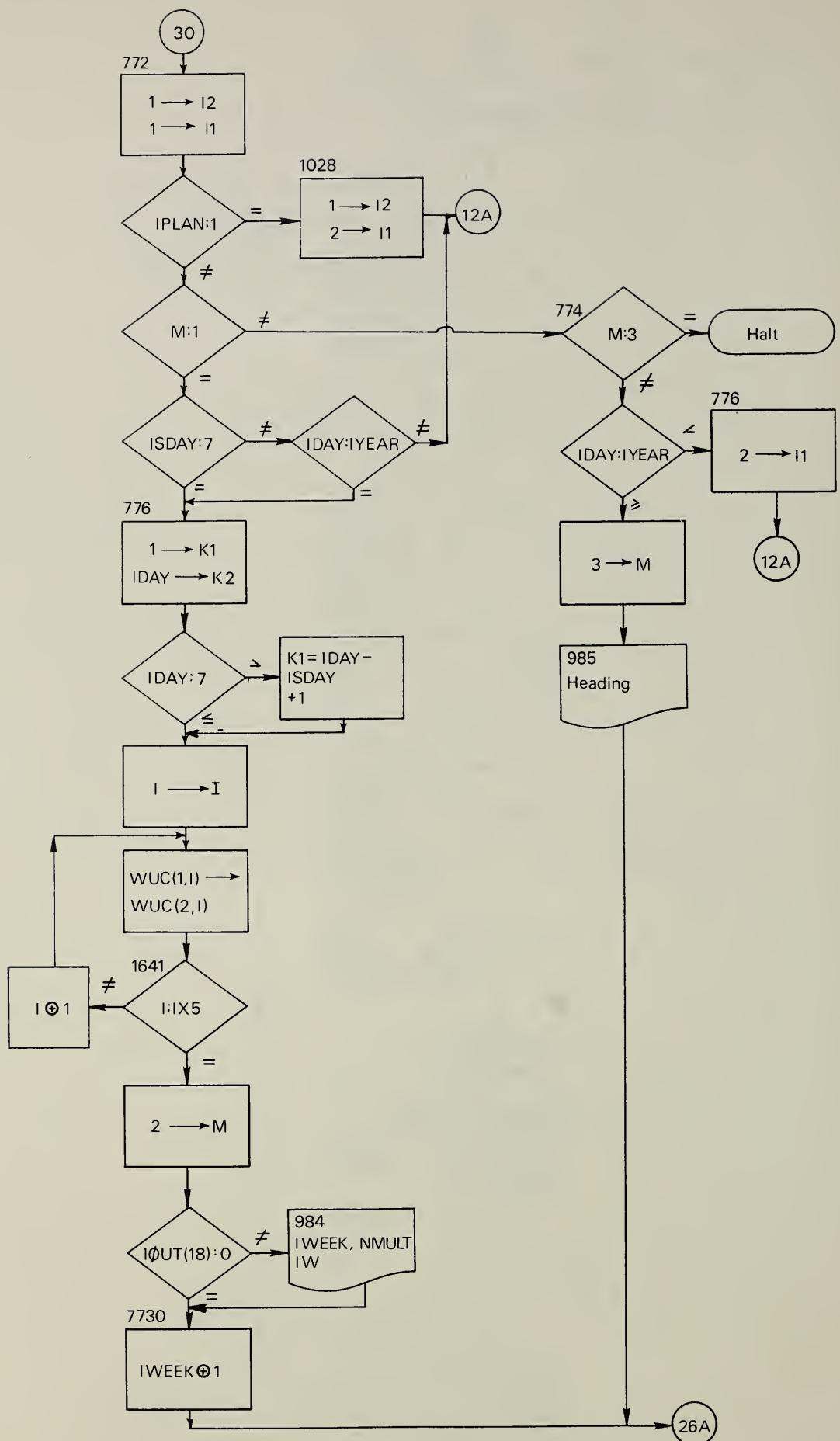


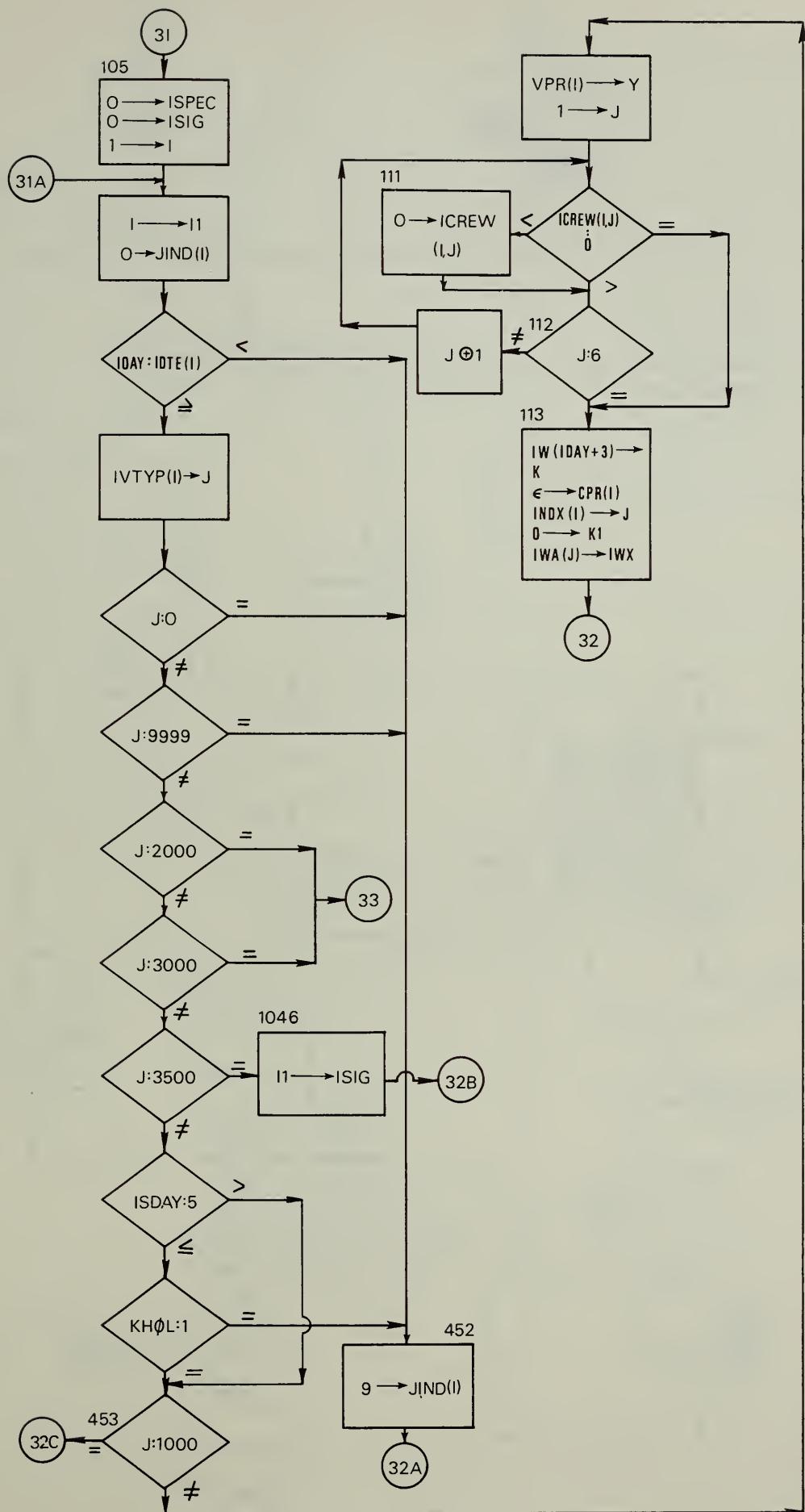


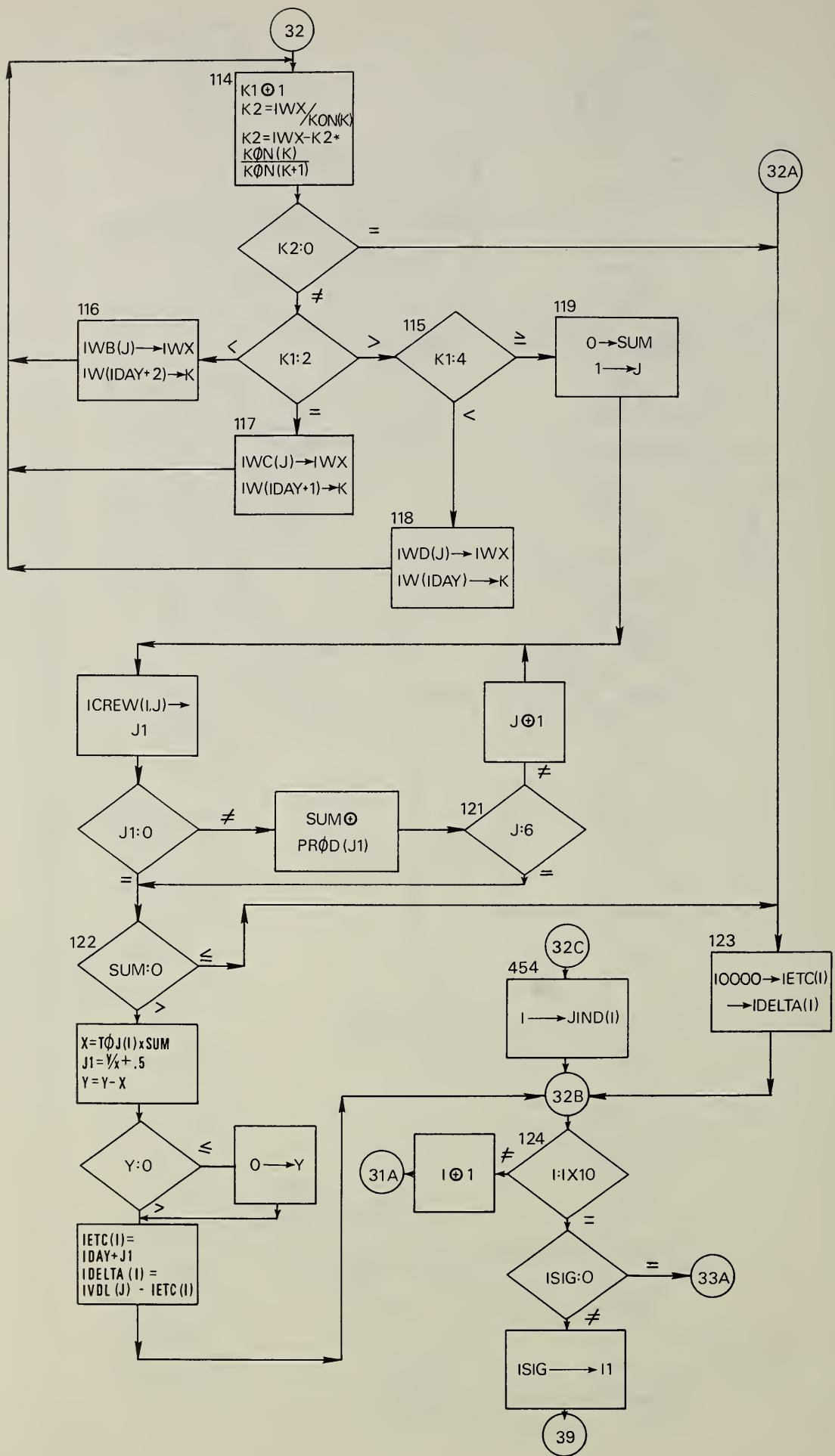


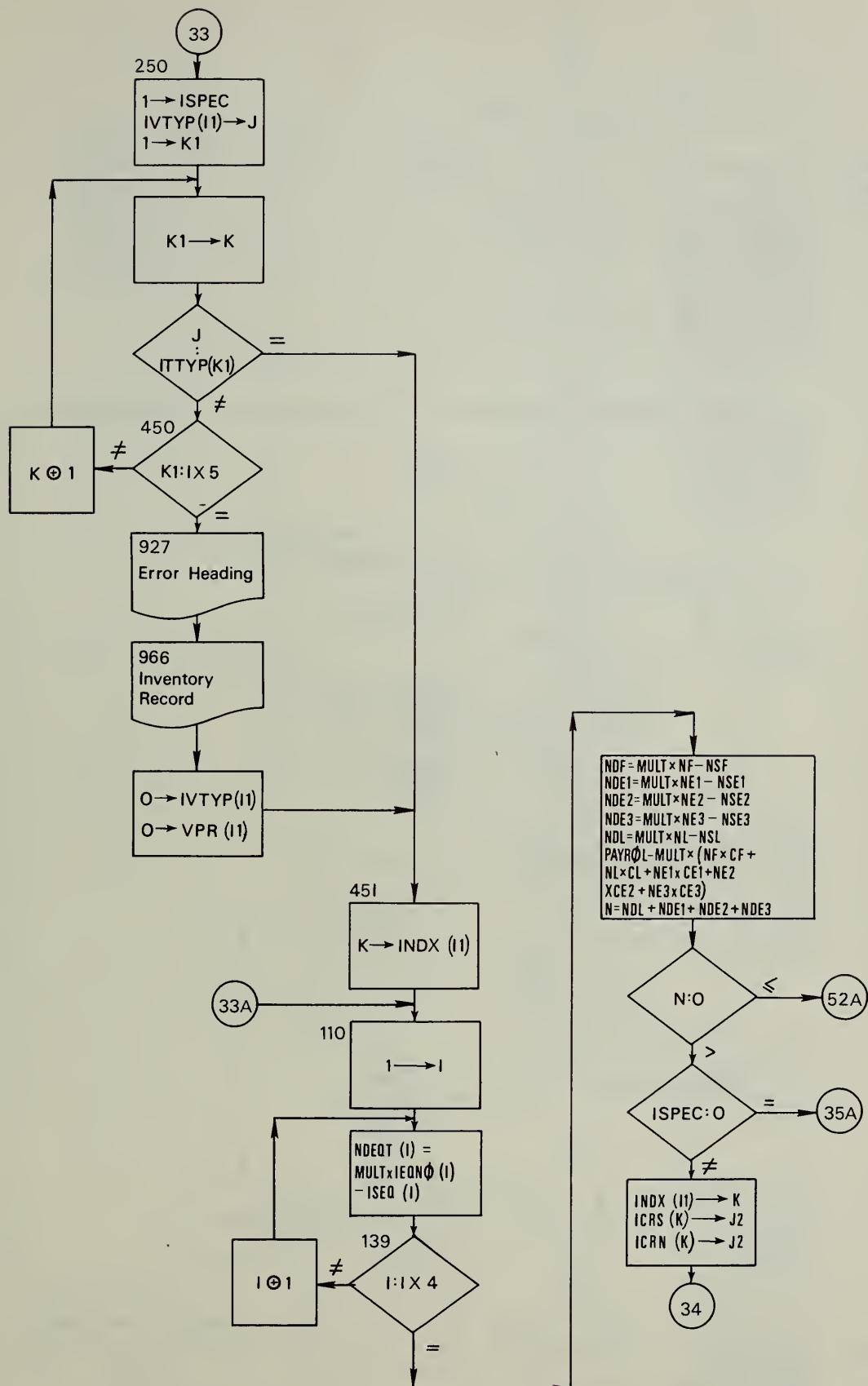


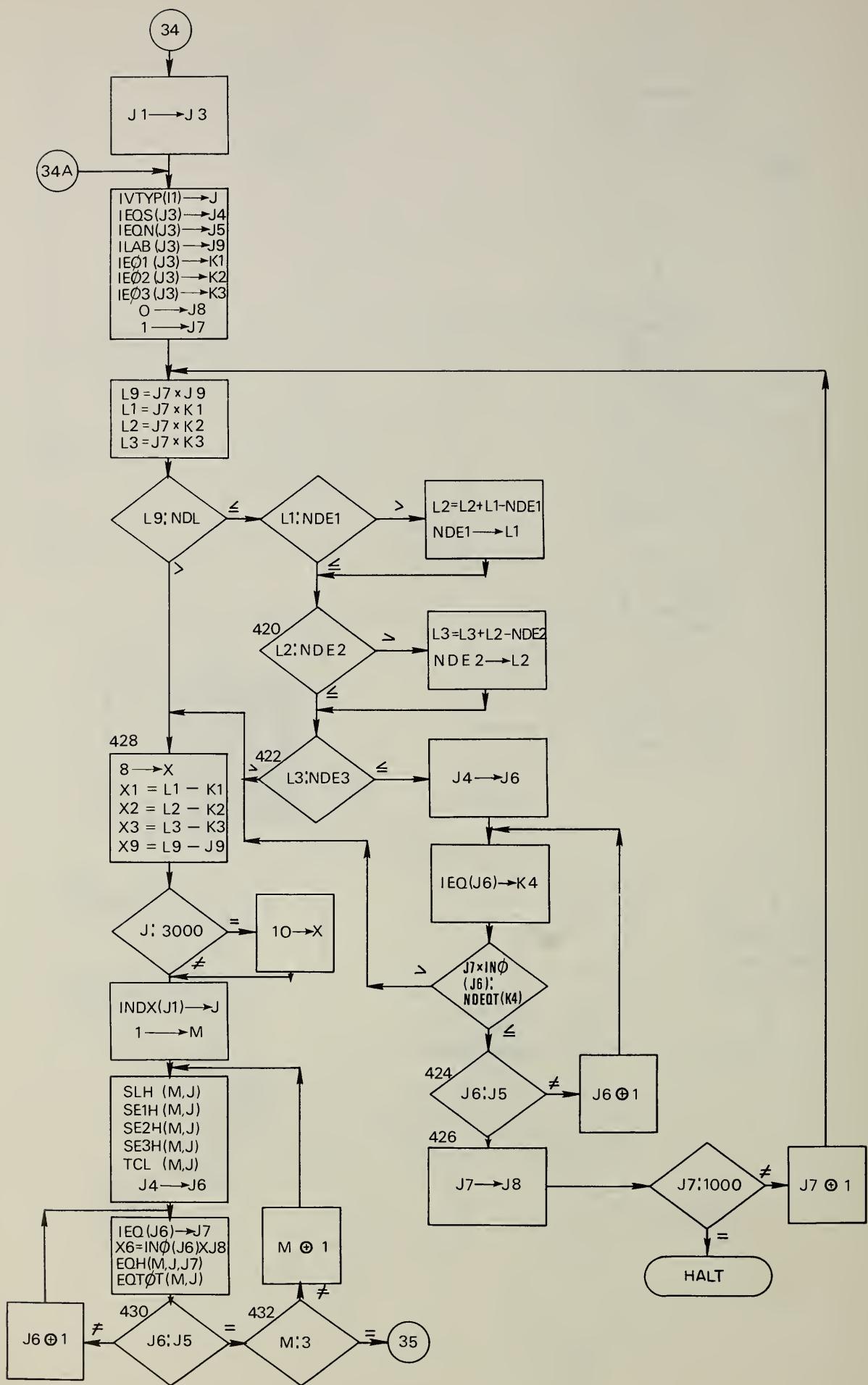


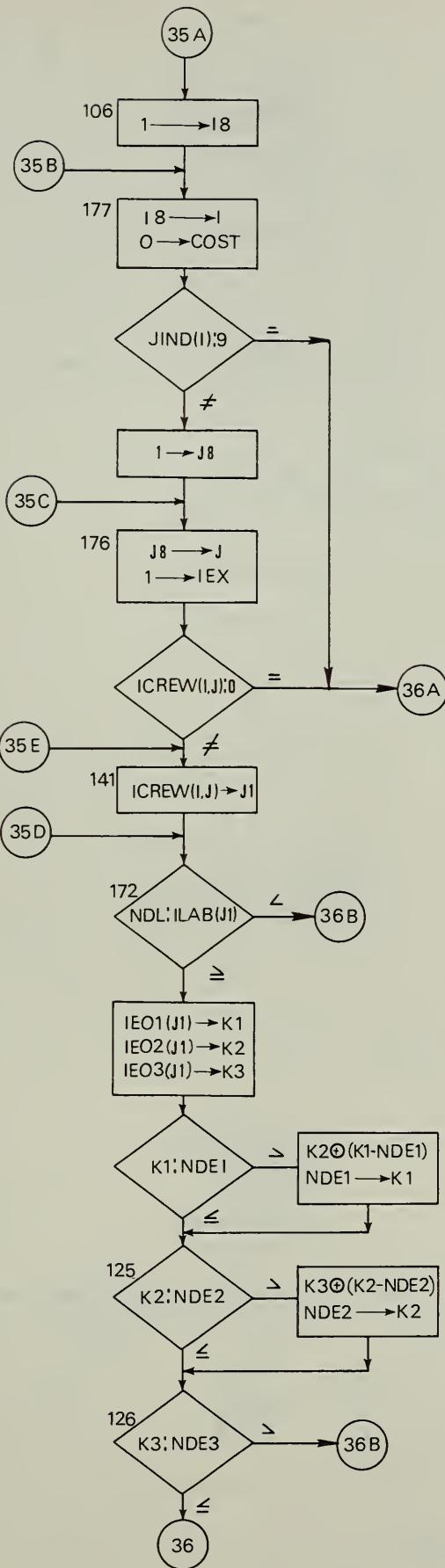
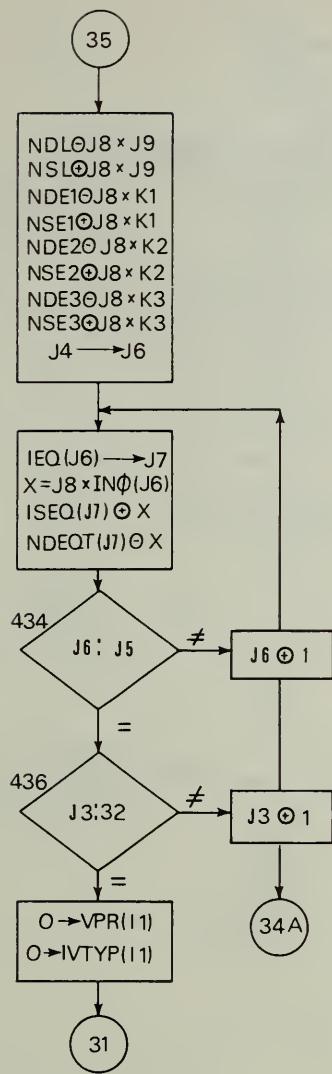


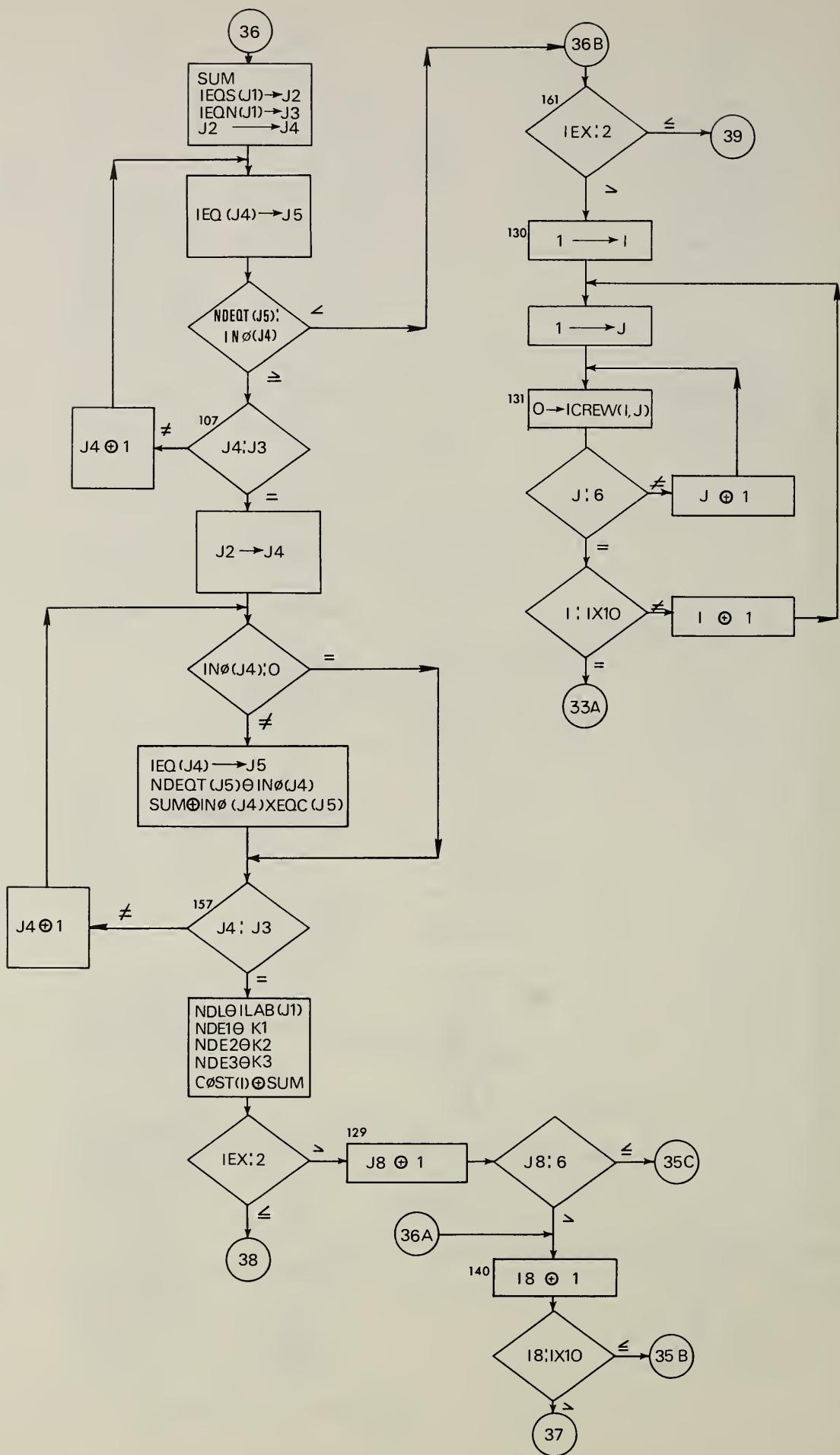


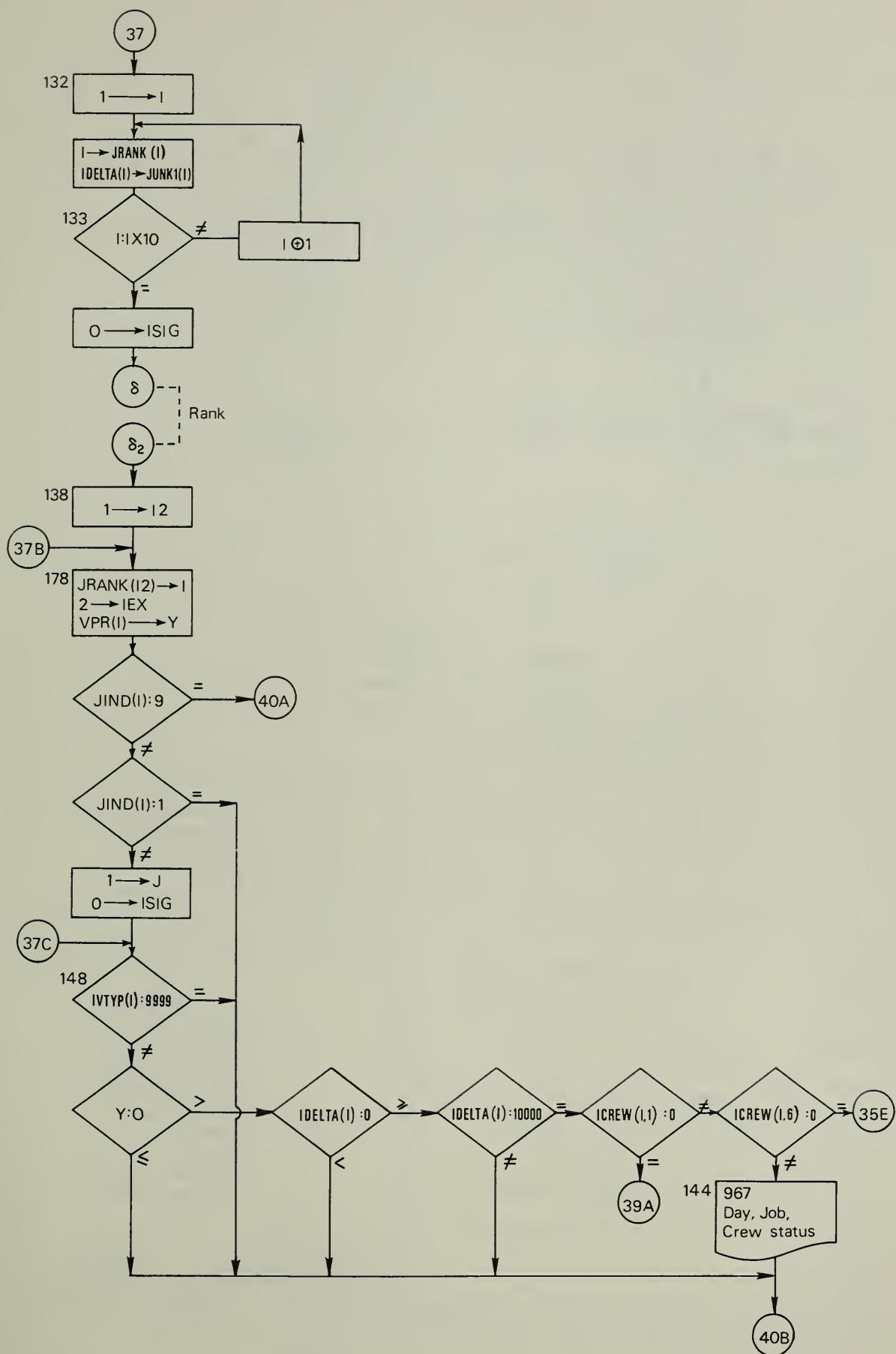


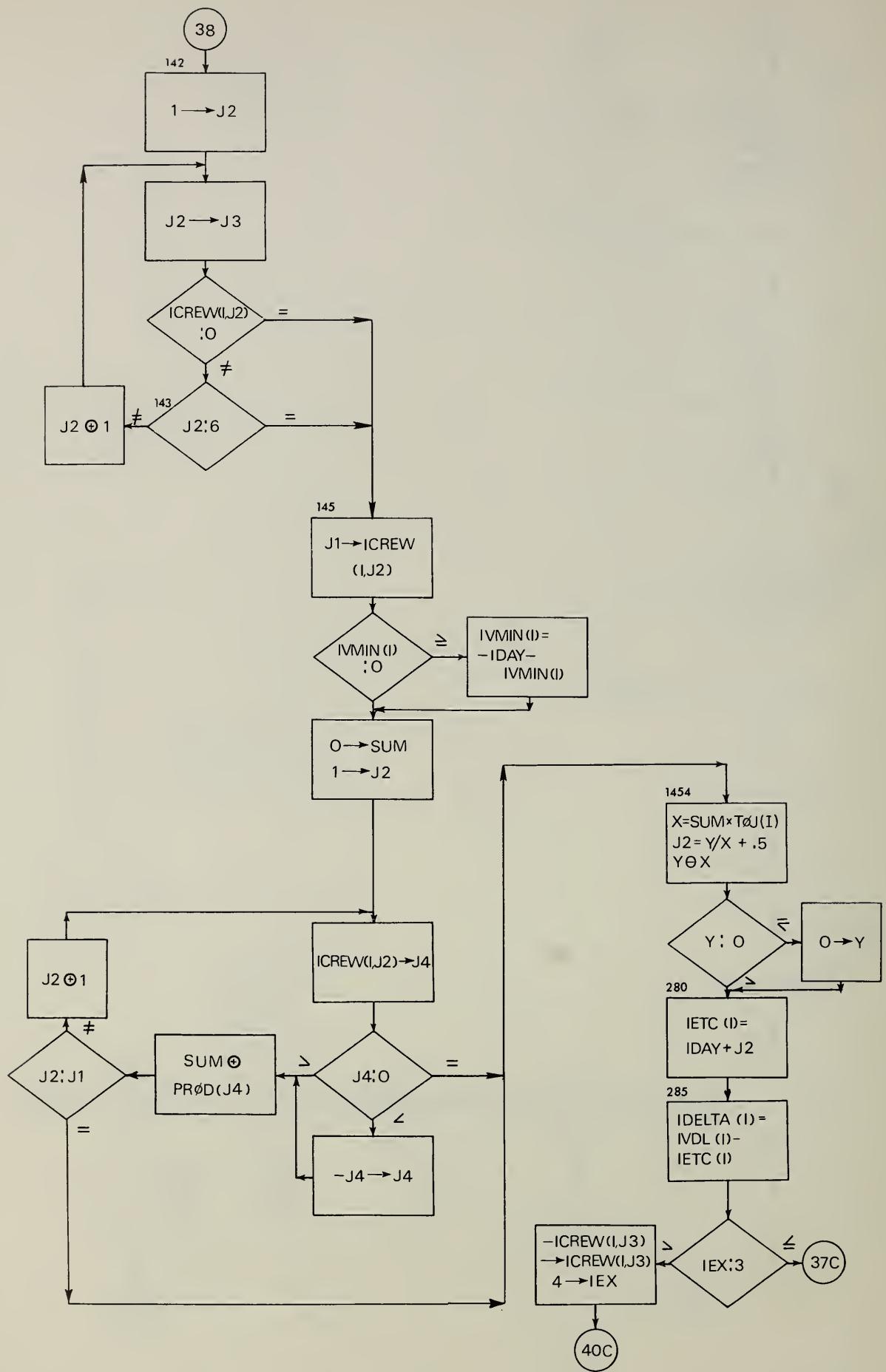


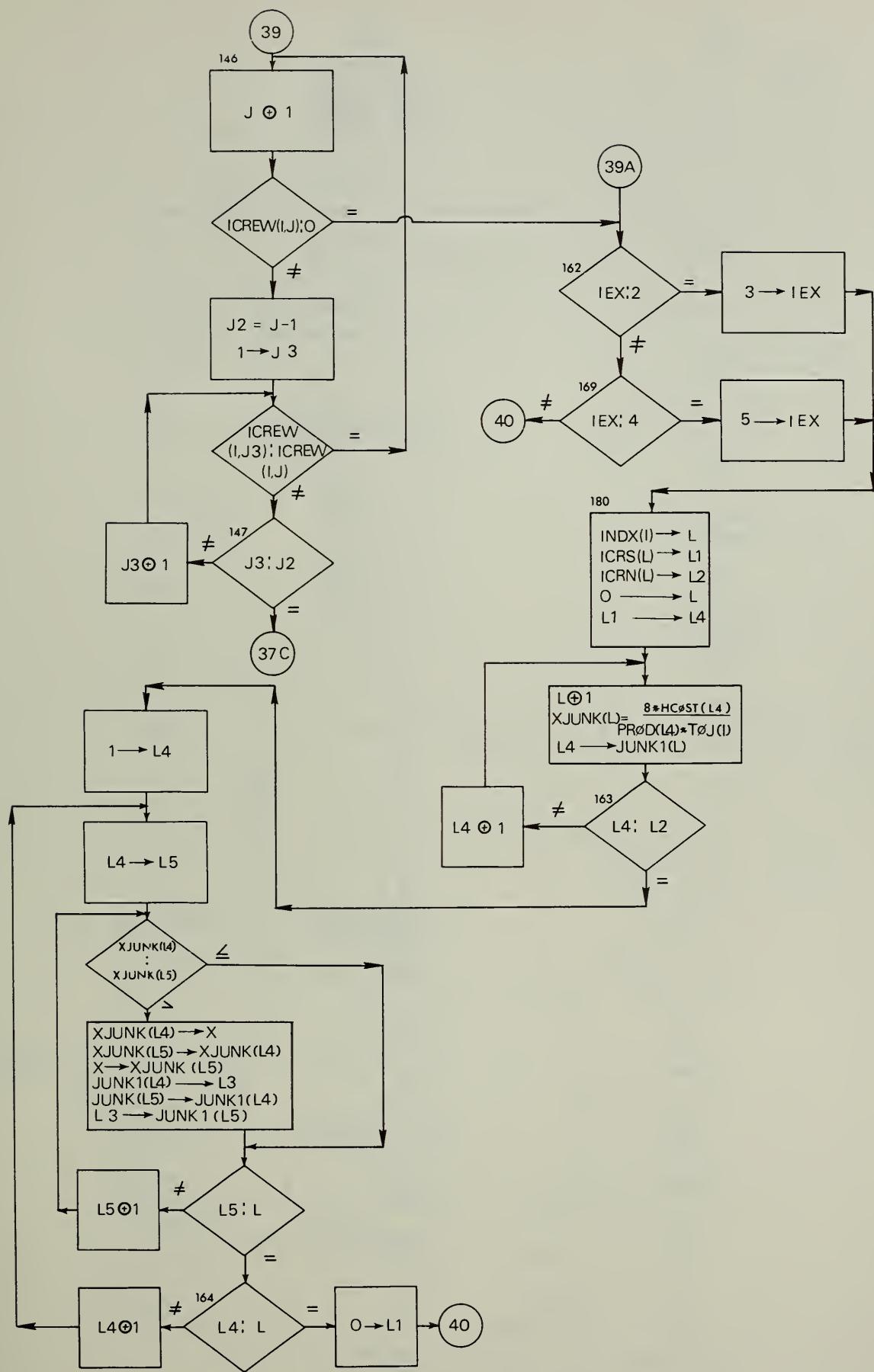


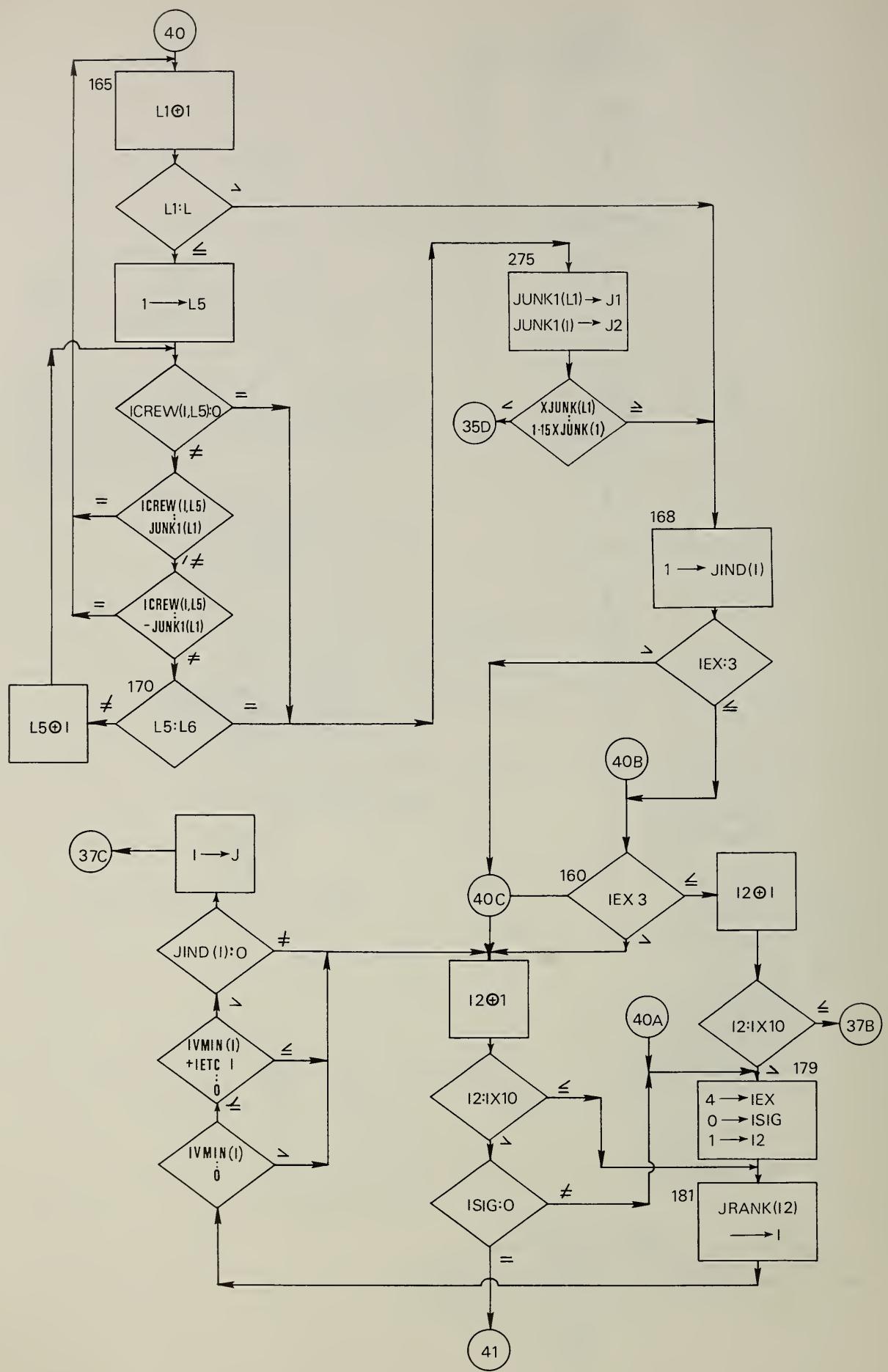


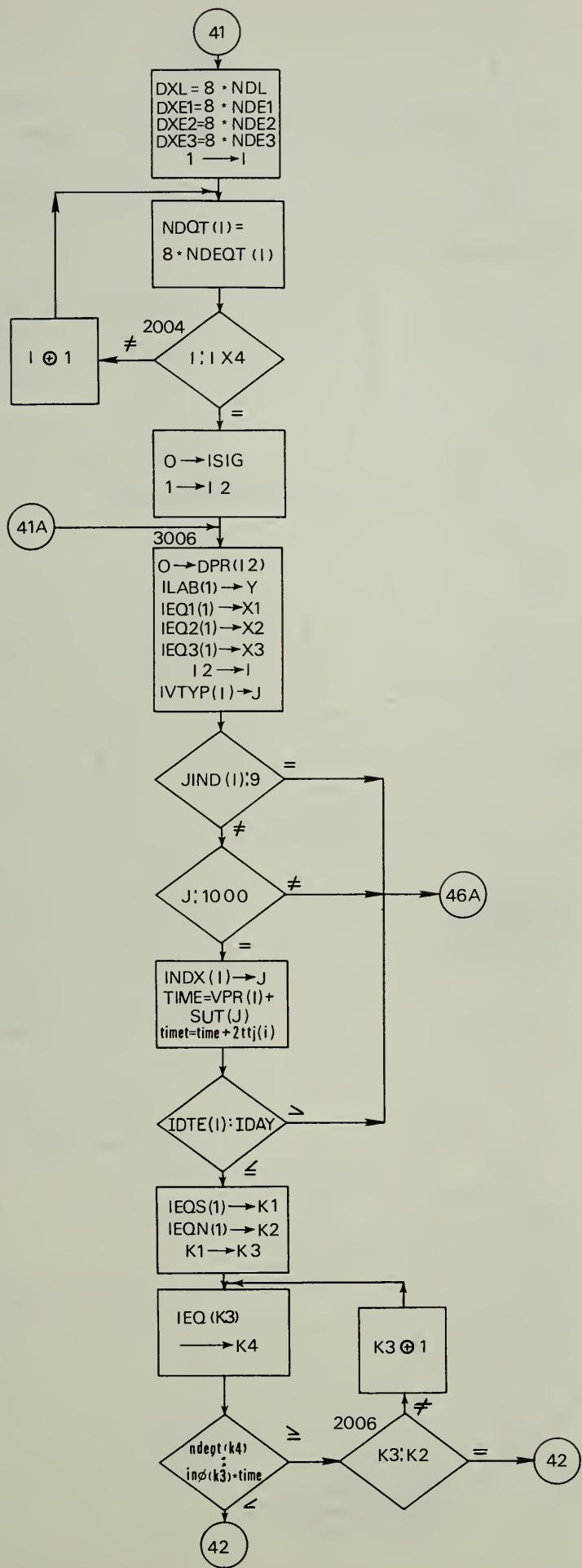


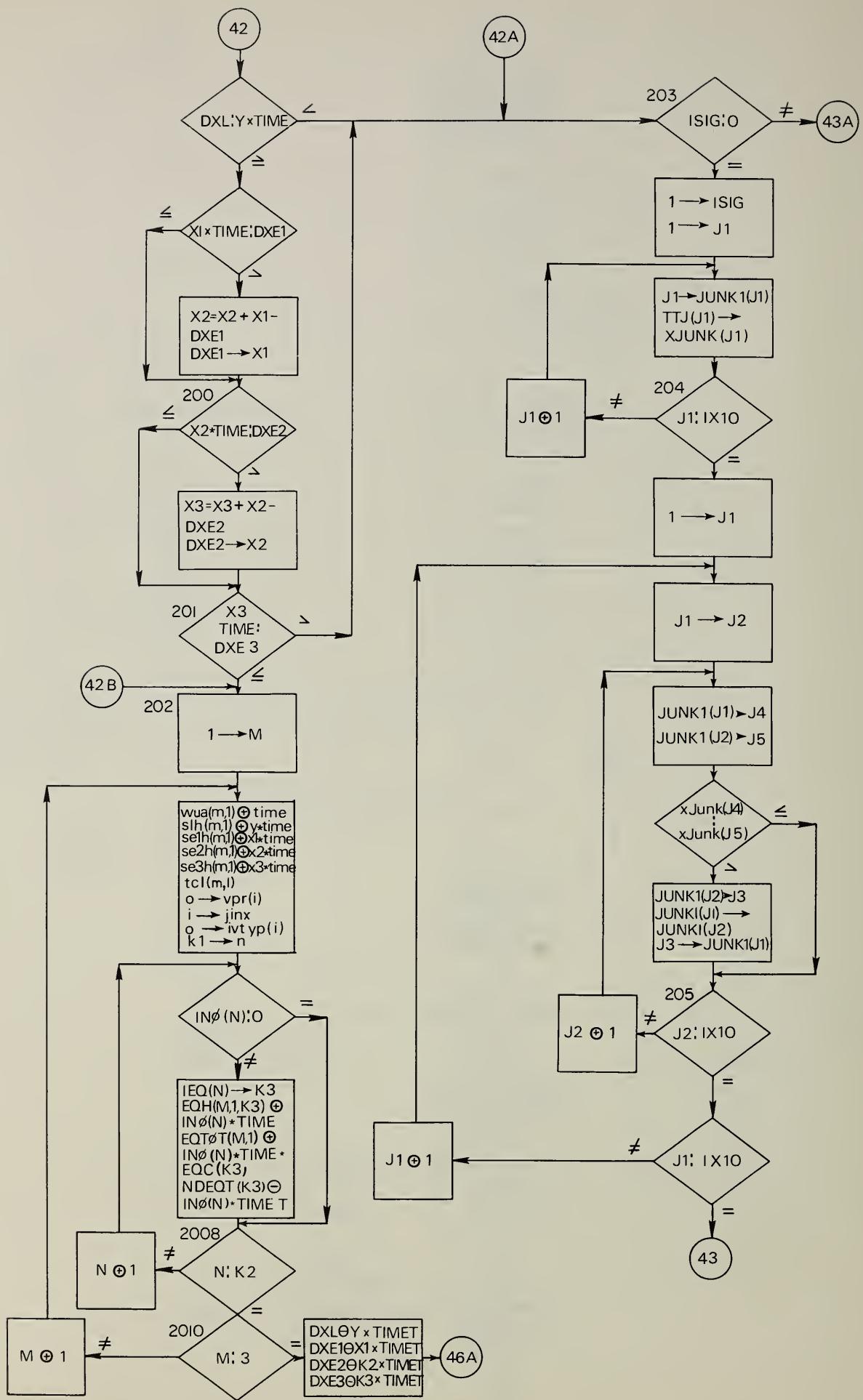


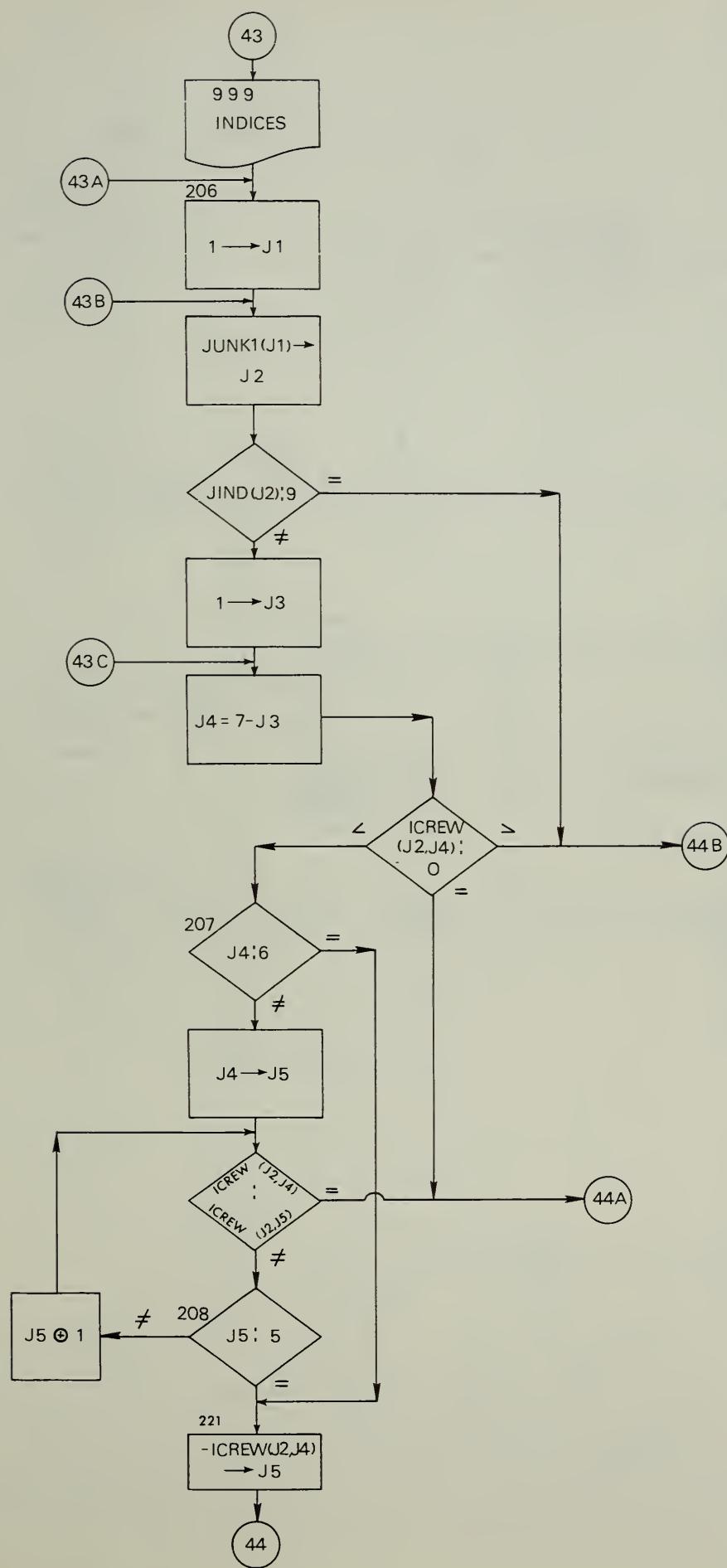


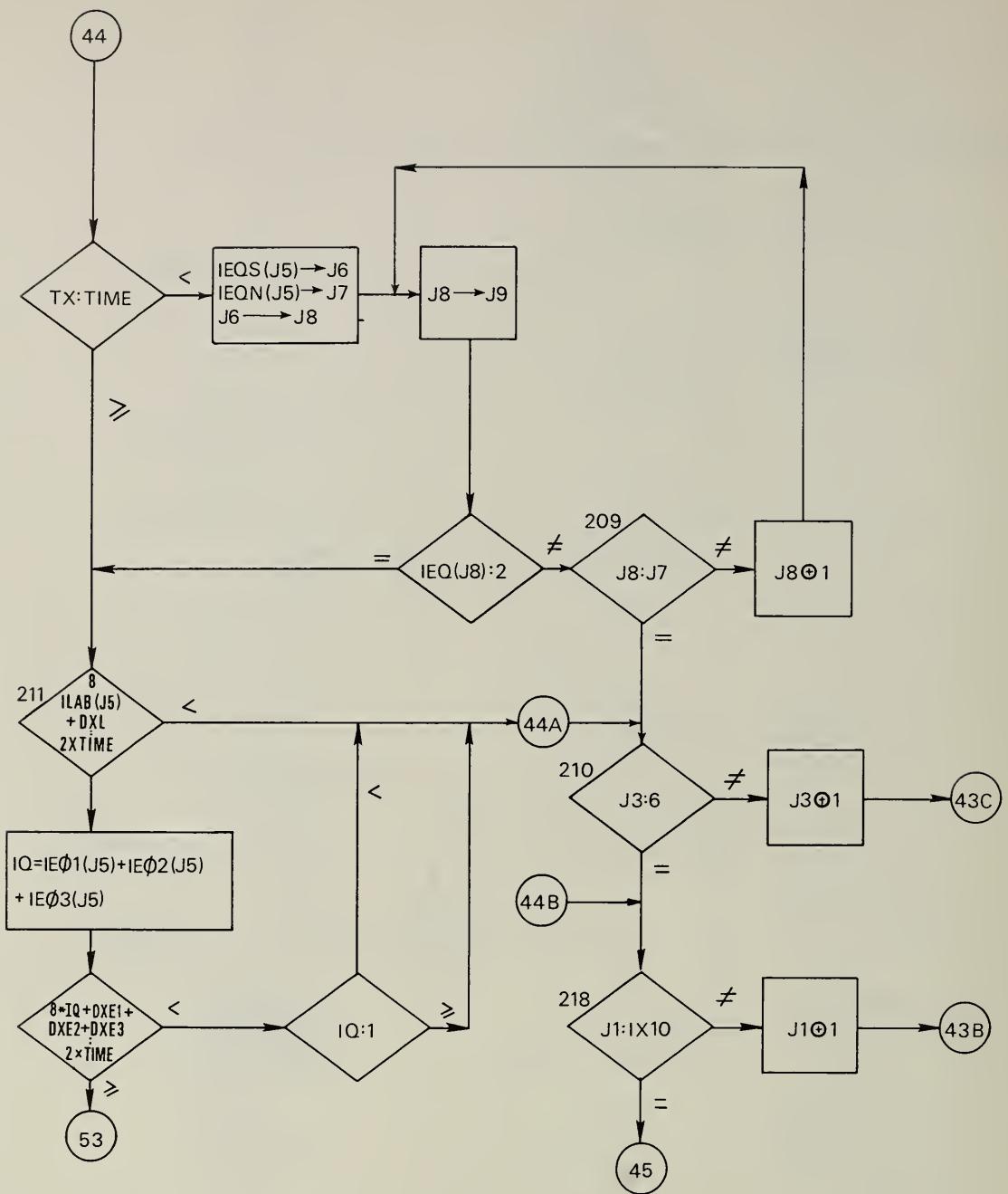


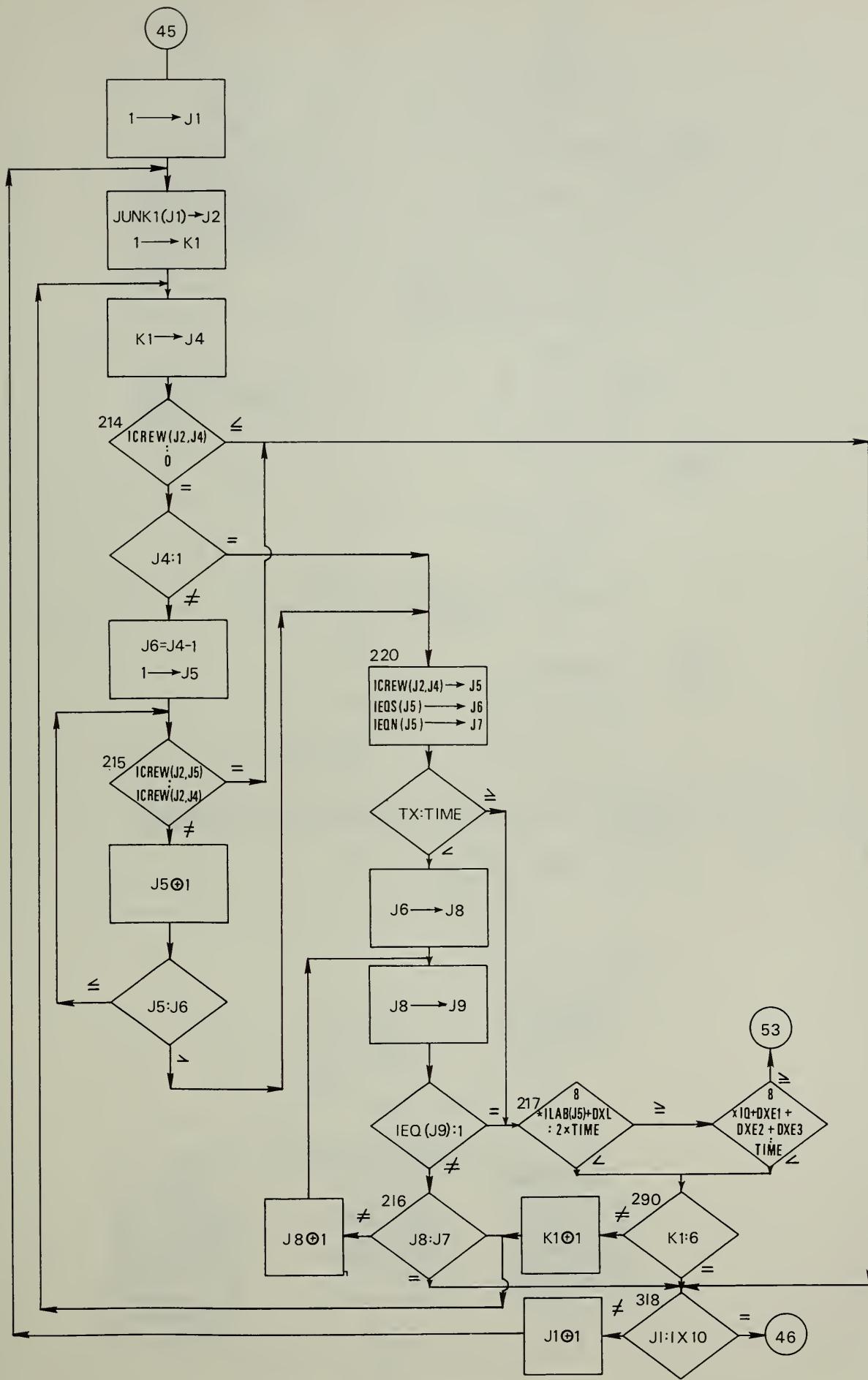


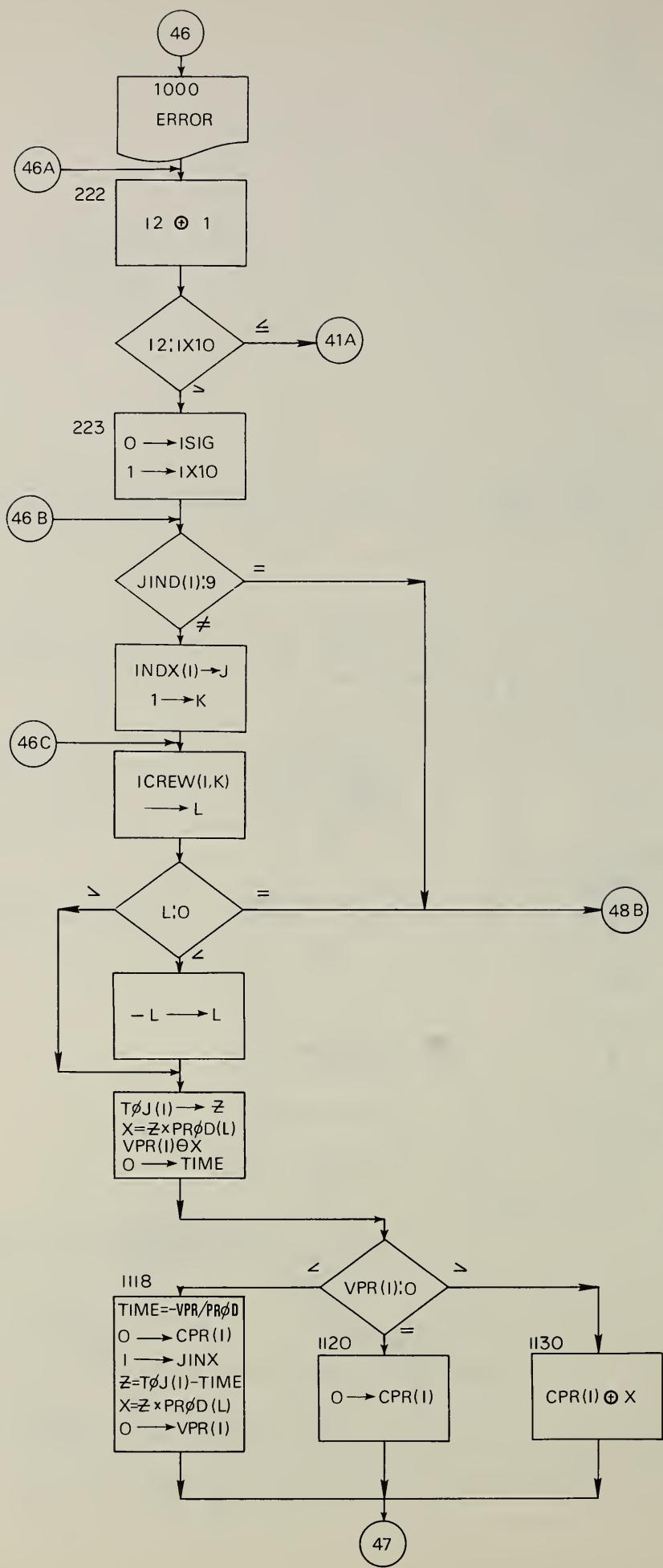


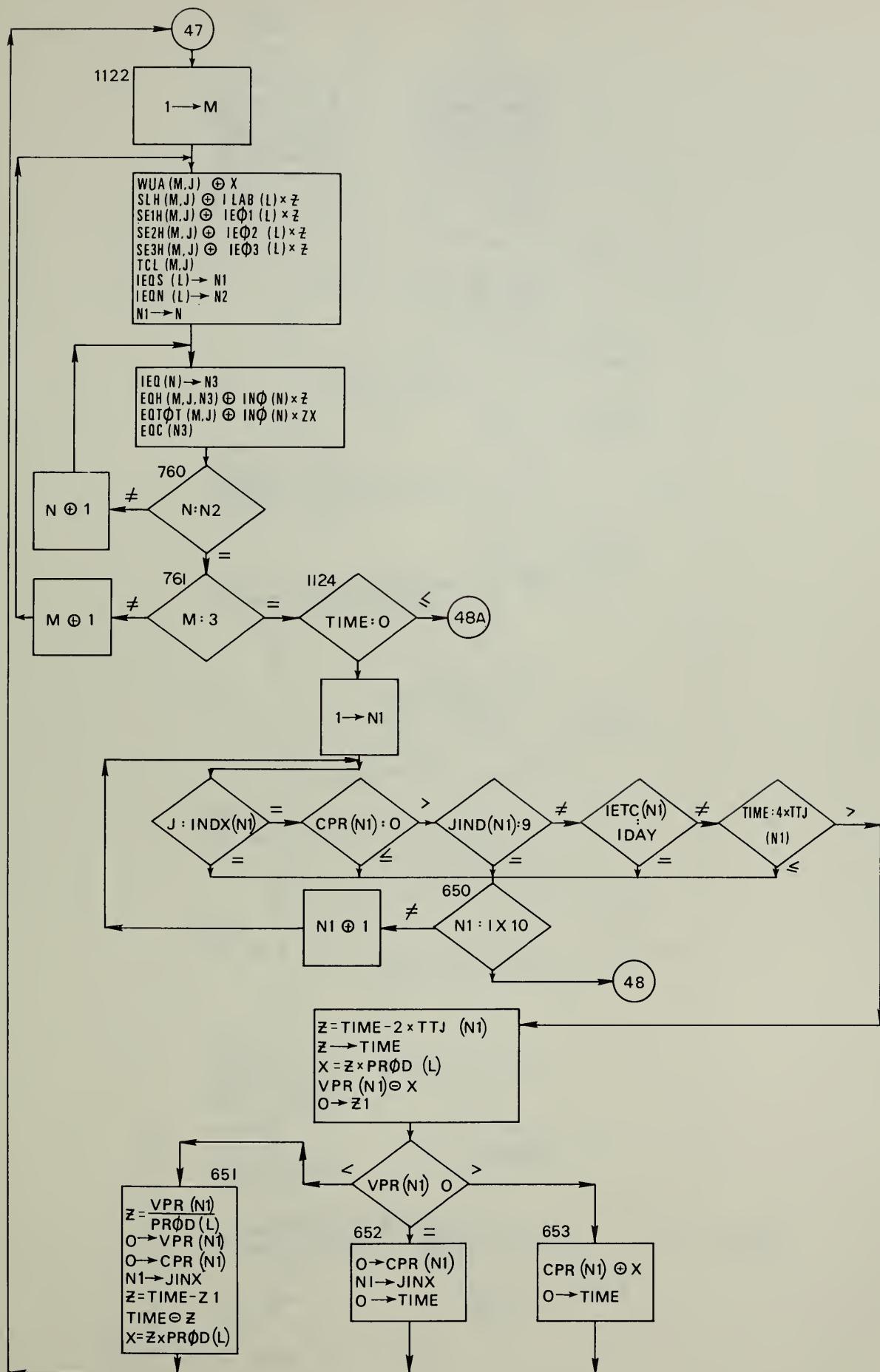


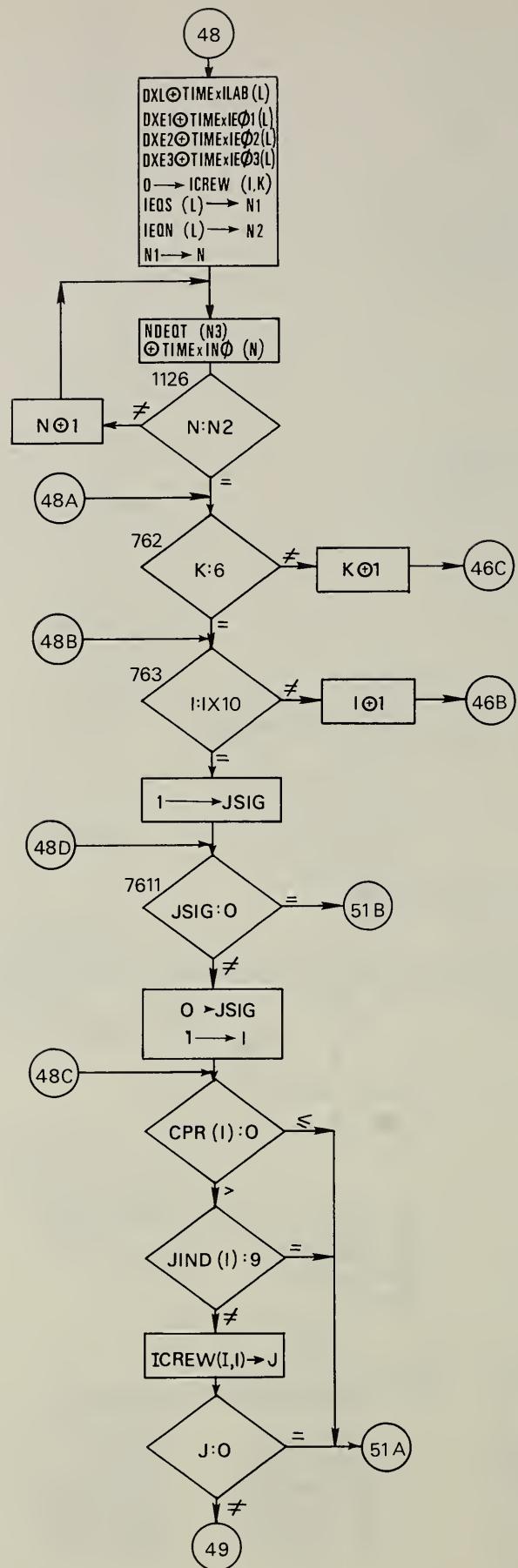


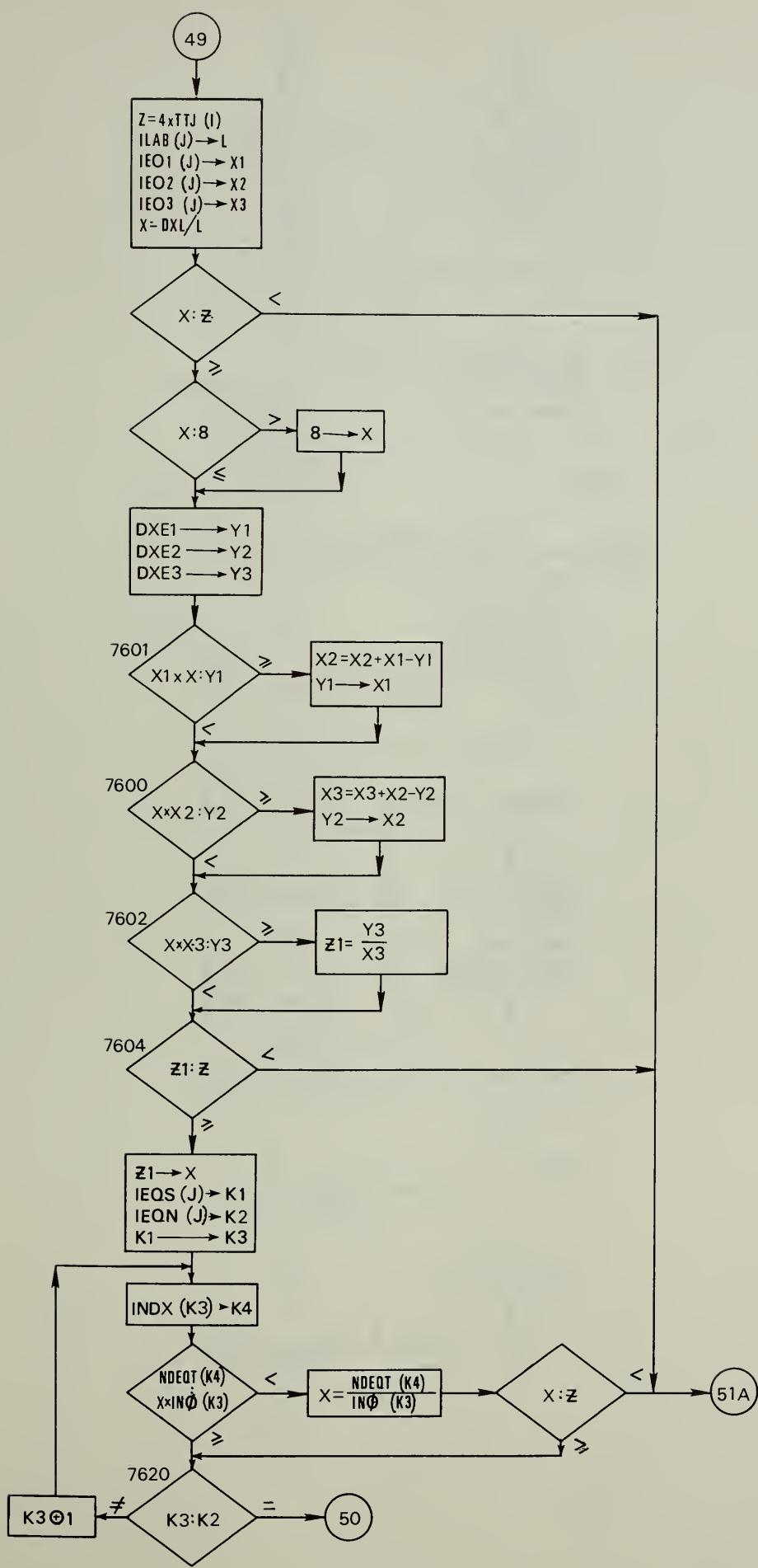


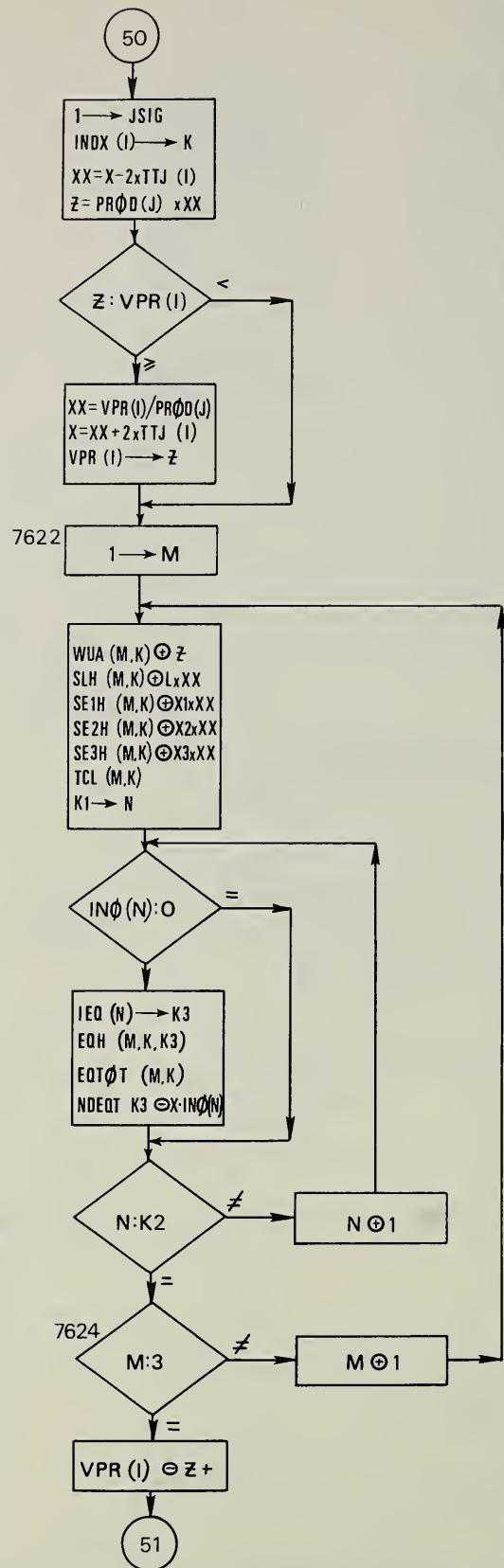


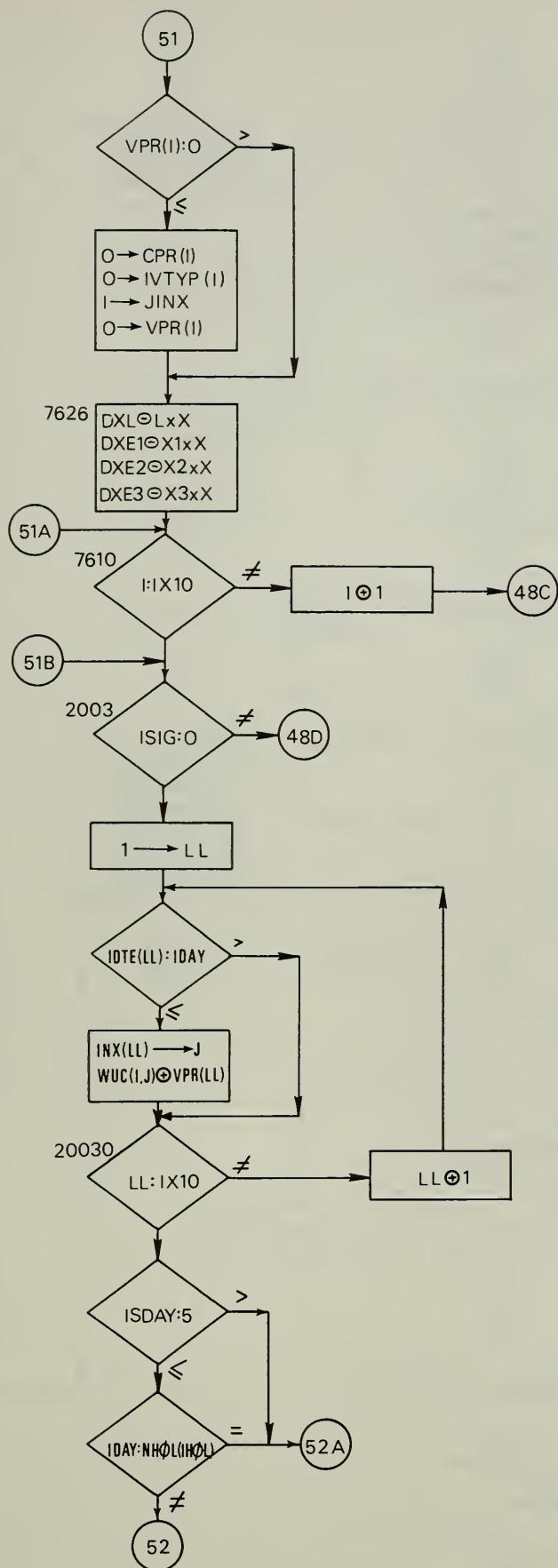


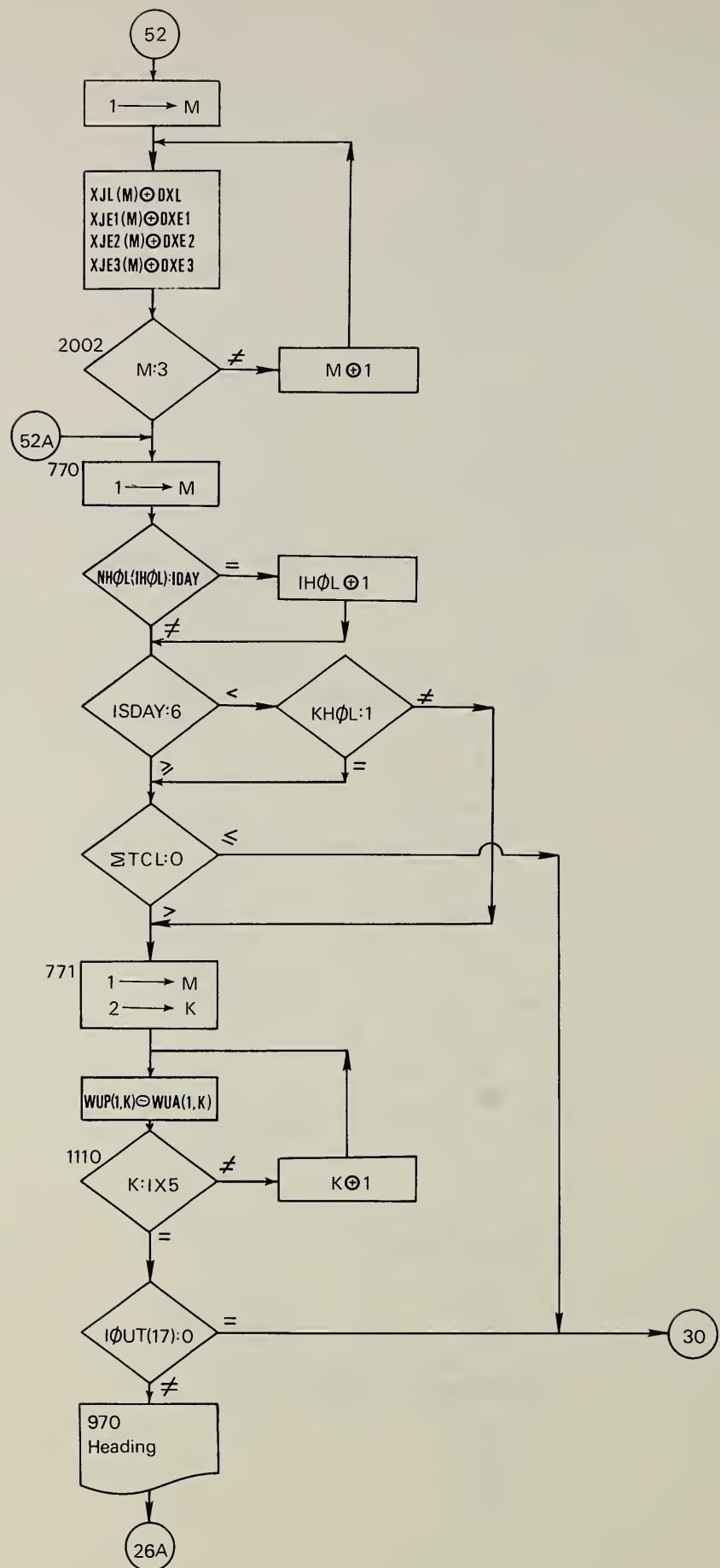


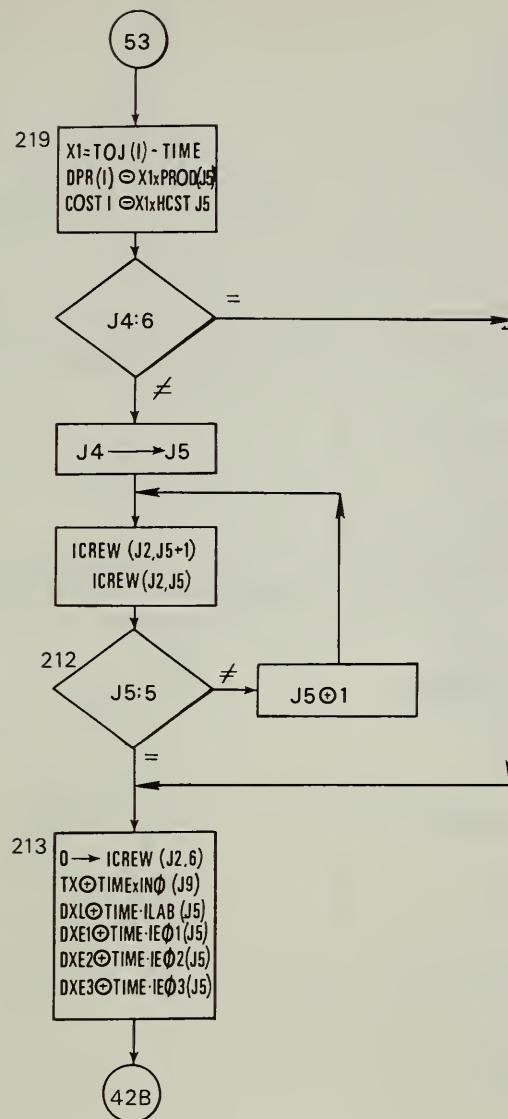


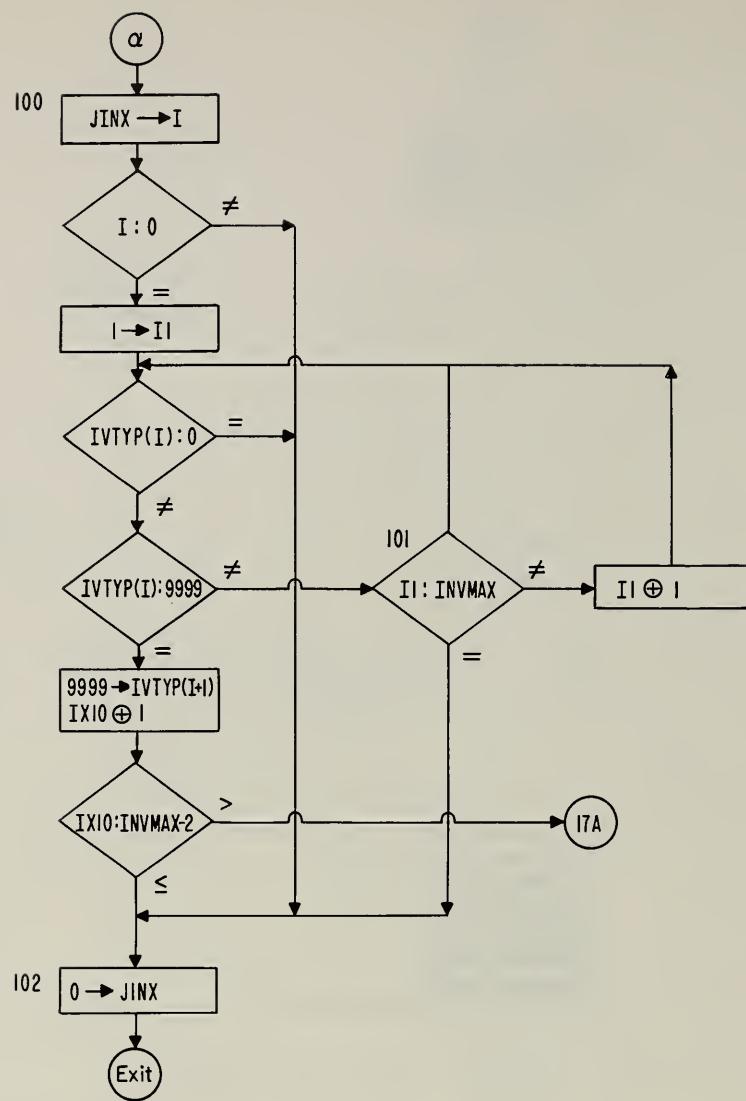


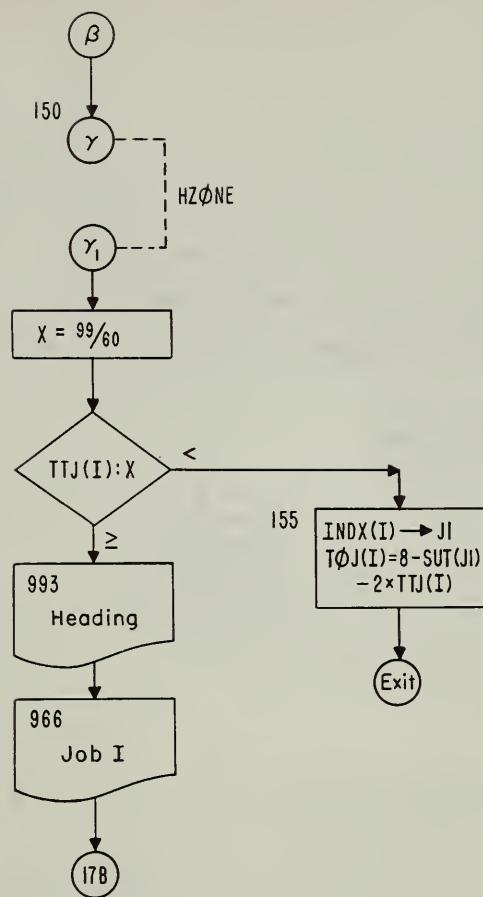


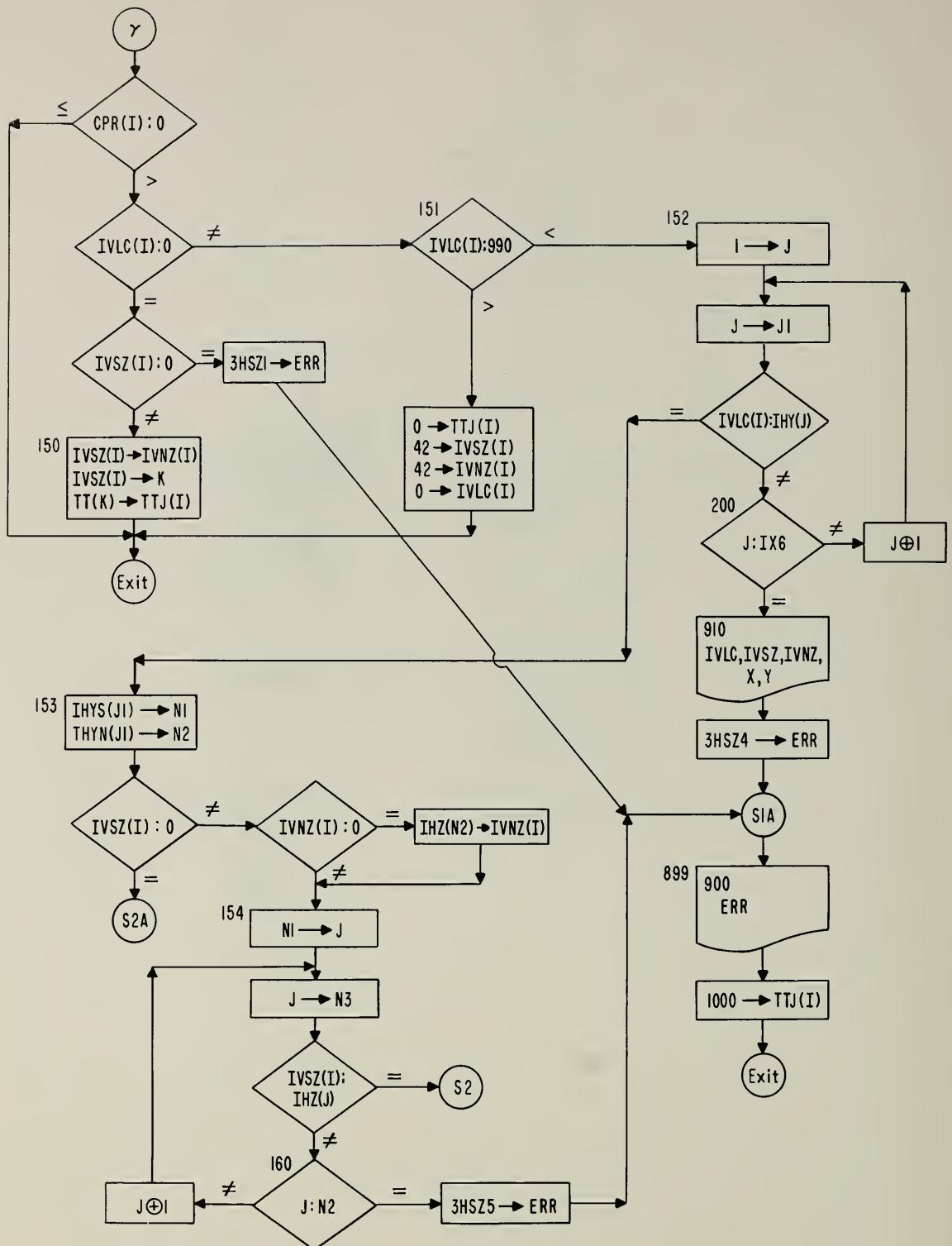


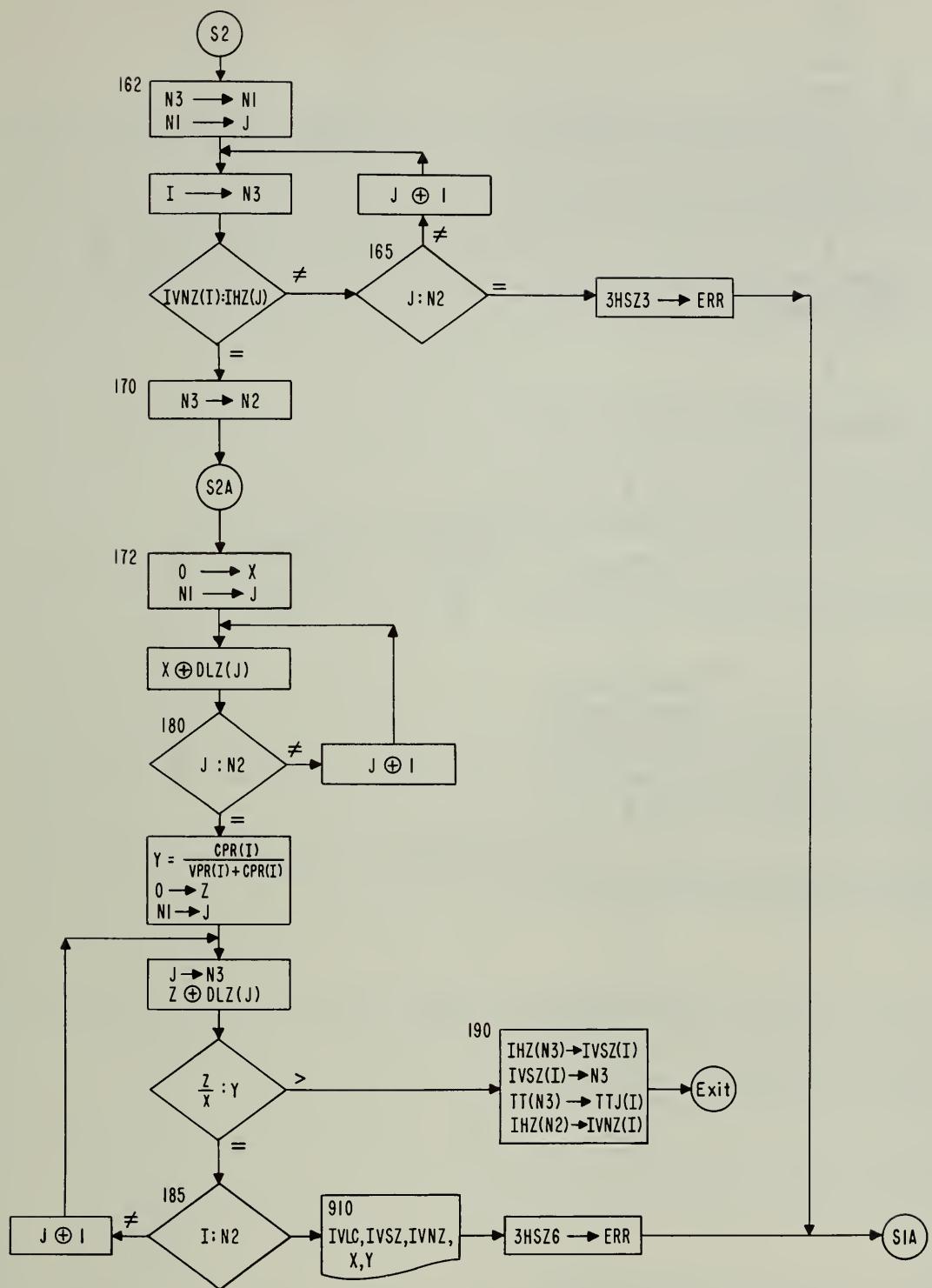


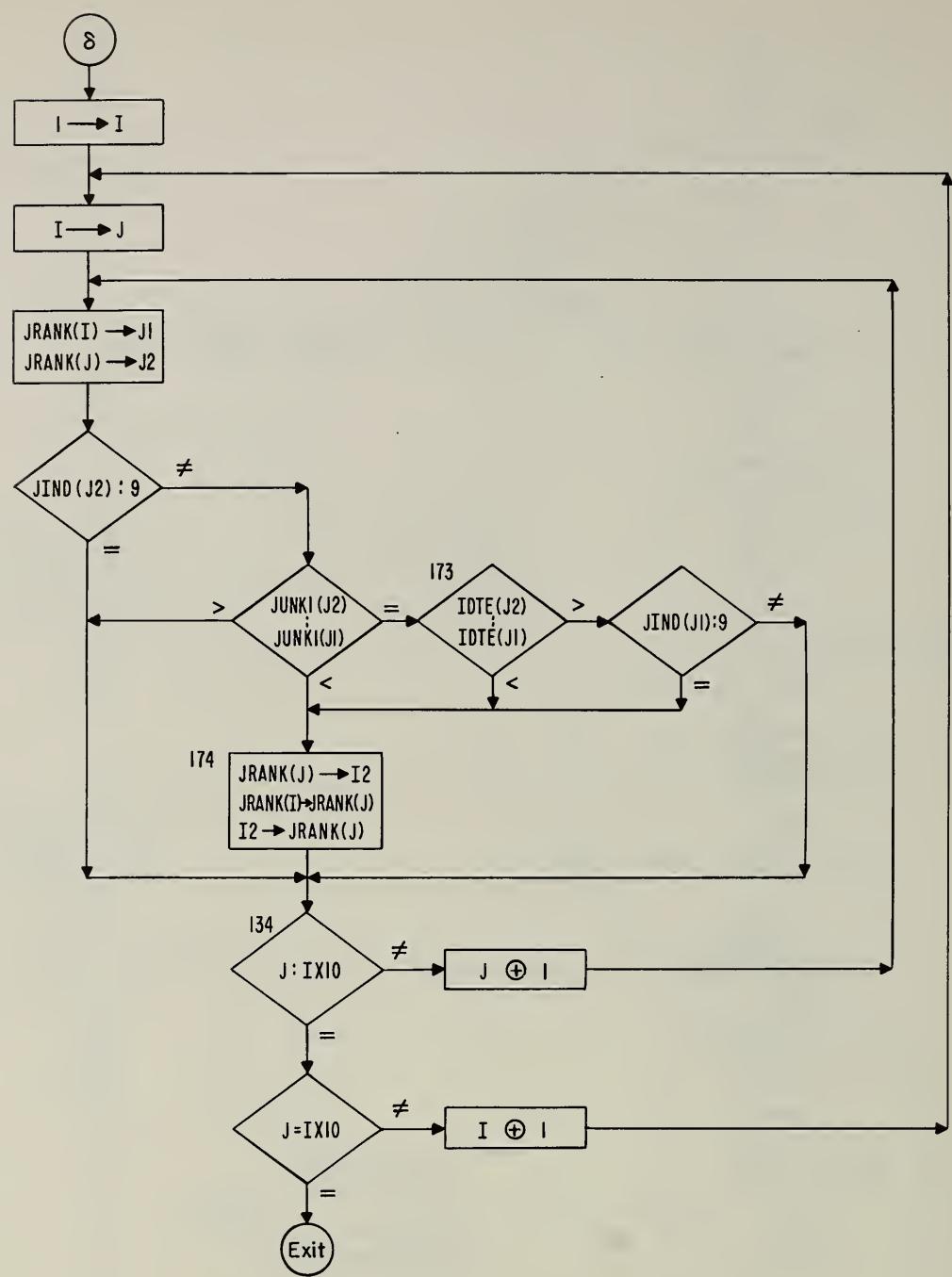












QIT FOR HIWAY, HIWAY
UNIVAC 1108 FORTRAN V LEVEL
THIS COMPIILATION WAS DONE ON 12 FEB 69 AT 15:07:33

MAIN PROGRAM

STORAGE USED (BLOCK, NAME, LENGTH)

0001	•CODE	013304
0000	•DATA	024254
0002	•BLANK	004346

EXTERNAL REFERENCES (BLOCK, NAME)

0003	HZONE
0004	RANK
0005	NRDCS
0006	NI01\$
0007	NI02\$
0010	NPRTS
0011	NSTOPS

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	001246	10L	0001	003362	100L	0000	022775	1000F	0001	012416	1003L	0001	012622	1005L
0001	012654	1006L	0001	012672	1007L	0001	012675	10n8L	0001	012724	1009L	0001	003424	101L
0001	012737	1010L	0001	012750	1011L	0001	001551	1012G	0001	013021	1014L	0001	012442	1015L
0001	013200	1016L	0001	013216	1018L	0001	003426	102L	0001	001563	1020G	0001	013221	1020L
0001	012277	1024L	0001	013207	1026L	0001	012207	1028L	0001	001600	1031G	0001	002723	1036L
0001	002277	1038L	0001	001611	1040L	0001	002731	1040L	0001	002766	1042L	0001	004537	1046L
0001	001823	1047G	0001	004447	105L	0001	005542	106L	0001	001662	1070G	0001	001321	11L
0001	005037	110L	0001	001711	1106G	0001	011243	1112L	0001	001722	1114G	0001	004565	112L
0001	010040	1120L	0001	001733	1122G	0001	010045	1122L	0001	001741	1127G	0001	004570	113L
0001	010042	1130L	0001	001753	1134G	0001	004603	114L	0001	001771	1144G	0001	002013	1157G
0001	004632	116L	0001	002021	1164G	0001	074641	117L	0001	004650	118L	0001	004657	119L
0001	002110	1214G	0001	004701	122L	0001	004737	123L	0001	002152	1233G	0001	004742	124L
0001	002176	1245G	0001	005625	125L	0001	005640	126L	0001	002266	1273G	0001	006025	132L
0001	002447	1363G	0001	005775	140L	0001	005770	141L	0001	006164	142L	0001	002632	1443G
0001	006203	145L	0001	002640	1452G	0001	006254	1454L	0001	006325	146L	0001	002653	1466G
0001	006073	148L	0001	001347	15L	0001	003655	150L	0001	002701	1503G	0001	002751	1534G
0001	002764	1541G	0001	003732	155L	0001	000070	156G	0001	005741	157L	0001	003054	1574G
0001	006547	160L	0001	000071	161G	0001	006005	161L	0001	006361	162L	0001	003162	1635G
0001	006461	164L	0001	006466	165L	0001	000101	167G	0001	006536	168L	0001	006370	169L
0001	006516	171L	0001	005575	172L	0001	003372	1733G	0001	003342	175L	0001	005560	176L
0001	000113	177G	0001	005544	177L	0001	006049	178L	0001	006563	179L	0001	006376	180L
0001	006570	181L	0001	000307	2L	0001	001353	20L	0001	007016	200L	0001	011054	2003L
0001	011076	20030L	0001	007167	2008L	0001	007032	201L	0001	007040	202L	0001	003576	2020G
0001	012224	2022L	0001	007214	203L	0001	007267	205L	0001	012452	2050L	0001	007273	206L
0001	000134	2076	0001	001363	21L	0001	007457	210L	0001	007411	211L	0001	007712	213L
0001	007514	215L	0001	007575	217L	0001	004173	2172G	0001	007461	218L	0001	007657	219L
0001	0001435	22L	0001	000153	220G	0001	002536	220L	0001	004226	2204G	0001	007353	221L
0001	007647	222L	0001	007755	223L	0001	000164	226G	0001	004455	2302G	0001	004560	2332G
0001	000175	234G	0001	004665	2375G	0001	001976	24L	0001	000204	242G	0001	004761	2431G

0001	005044	24646	0001	004750	250L	0001	005156	2504G	0001	000225	252G	0001	005202	2521G	
0001	005256	2544G	0001	005403	2570G	0001	005426	2600G	0001	005521	2622G	0001	000252	266G	
0001	005704	2673G	0001	005723	2703G	0001	006015	2737G	0001	000263	274G	0001	006016	2742G	
0001	006521	275L	0001	006031	2751G	0001	006157	28L	0001	001602	29L	0001	007633	290L	
0001	000325	3L	0001	006666	3006L	0001	003507	301L	0001	006161	3015G	0001	003526	302L	
0001	006173	3023G	0001	003647	3030L	0001	006233	3037G	0001	003463	304L	0001	000303	305G	
0001	002341	305L	0001	006350	3071G	0001	004232	3090L	0001	00402	3096L	0001	001652	31L	
0001	002324	310L	0001	006412	3114G	0001	006434	3123G	0001	006442	3126G	0001	000321	315G	
0001	002311	315L	0001	006503	3150G	0001	007635	318L	0001	001660	32L	0001	006657	3225G	
0001	004102	325L	0001	006752	3256G	0001	000341	326G	0001	001670	33L	0001	007077	3302G	
0001	007130	3316G	0001	007225	3343G	0001	007236	3351G	0001	007244	3354G	0001	007300	3371G	
0001	007314	3377G	0001	001672	34L	0001	007343	3410G	0001	007377	3424G	0001	007465	3447G	
0001	007472	3453G	0001	007560	3500G	0001	007707	3536G	0001	007763	3553G	0001	010000	3561G	
0001	010122	3612G	0001	010155	3625G	0001	010212	3640G	0001	010360	3711G	0001	010420	3730G	
0001	010567	3775G	0001	001472	39L	0001	000706	4L	0001	011777	40L	0001	010723	4021G	
0001	010750	4032G	0001	011063	4065G	0001	002006	41L	0001	011121	4100G	0001	011204	4120G	
0001	011240	4137G	0001	011306	4156G	0001	005234	420L	0001	005247	422L	0001	011420	4225G	
0001	005303	428L	0001	002063	43L	0001	011643	4302G	0001	011654	4310G	0001	011703	4322G	
0001	011725	4332G	0001	011743	4342G	0001	011750	4347G	0001	012010	4363G	0001	002126	44L	
0001	003034	440L	0001	012062	4406G	0001	002106	441L	0001	003036	449L	0001	012103	4421G	
0001	000606	450G	0001	005034	451L	0001	004545	452L	0001	004545	453L	0001	004735	454L	
0001	000345	46L	0001	012371	4662G	0001	012377	4665G	0001	000460	47L	0001	002437	4705G	
0001	012347	4653G	0001	012471	4723G	0001	012551	4742G	0001	000663	4746	0001	012630	4760G	
0001	0012450	4715G	0001	000643	49L	0001	000727	5L	0001	012755	5020G	0001	013151	5060G	
0001	002165	51L	0001	013260	5112G	0001	013261	5115G	0001	002353	53L	0001	002443	54L	
0001	002426	55L	0001	002346	56L	0001	001071	57G	0001	002510	58L	0001	001046	6L	
0001	003521	61L	0001	011112	611G	0001	011164	625G	0001	003202	63L	0001	003256	630L	
0001	003261	631L	0001	003273	64L	0001	012025	640G	0001	00216	65L	0001	010315	650L	
0001	010303	652L	0001	010310	653L	0001	001313	675G	0001	003100	69L	0001	001222	7L	
0001	003102	70L	0001	002576	700L	0001	003013	709L	0001	003110	71L	0001	001341	710G	
0001	003335	72L	0001	001375	730G	0001	001442	751G	0001	010521	7600L	0001	010535	7602L	
0001	010546	7604L	0001	011052	7610L	0001	010411	761L	0001	010401	762L	0001	010623	7620L	
0001	010655	7622L	0001	011007	7624L	0001	011030	7626L	0001	010404	763L	0001	012135	766L	
0001	011136	770L	0001	011174	771L	0001	012014	772L	0001	011232	773L	0001	012107	7730L	
0001	012113	774L	0001	011342	775L	0001	001517	776G	0001	012036	776L	0001	011405	777L	
0001	011673	780L	0001	011734	782L	0001	011116	8L	0001	003336	80L	0001	003440	81L	
0001	004011	82L	0001	003776	820L	0001	004011	83L	0001	004033	830L	0001	009120	84L	
0001	004142	840L	0001	012214	899L	0000	022331	900F	0000	022332	901F	0000	022333	902F	
0000	022340	903F	0000	022344	904F	0000	022351	905F	0000	022353	906F	0000	022357	907F	
0000	022367	908F	0000	022370	909F	0001	004275	91L	0001	004330	92L	0000	022372	920F	
0000	0001	012140	920L	0000	022401	921F	0001	012146	9210L	0000	022411	922F	0001	012154	9220L
0000	0000	022422	923F	0001	012162	9230L	0000	022433	924F	0001	012170	9240L	0000	022444	925F
0000	0000	022454	926F	0000	022471	927E	0000	022475	928E	0000	022500	929E	0001	004333	93L
0000	0000	022513	930F	0000	022517	931F	0000	022550	932F	0000	022554	933F	0000	022564	934F
0000	0000	022571	935F	0000	022604	936F	0000	022622	937F	0001	012176	9370L	0001	004370	95L
0000	0000	022632	950F	0000	022634	951F	0000	022643	952F	0000	022661	953F	0000	022671	954F
0000	0000	022676	955F	0000	022700	956F	0000	022705	957F	0000	022710	958F	0000	022713	959F
0000	0001	004414	961	0000	022721	960F	0000	022727	961F	0000	022731	962F	0000	022733	963F
0000	0000	022745	964F	0000	022751	965F	0000	022761	966E	0000	022765	967F	0000	022767	968F
0000	0000	023002	969F	0000	023016	970F	0000	023032	971F	0000	023054	972F	0000	023100	973F
0000	0000	023107	974F	0000	023112	975F	0000	023115	976F	0000	023121	978F	0000	023127	980F
0000	0000	023133	982F	0000	023136	983F	0000	023142	984F	0000	023156	985F	0000	023163	986F
0000	0000	023174	987F	0000	023202	988F	0000	023211	990F	0000	023214	991F	0000	023216	992F
0000	0000	023221	993F	0000	023235	994F	0000	023244	995F	0000	023254	996F	0001	023255	9960L
0000	0000	023243	997E	0000	023265	998E	0000	023270	999F	0000	022166	CE1	0000	022170	CE2
0000	0000	R 022172	CE3	0000	R 022164	CF	0000	R 022179	CL	0000	R 013330	COST	0002	R 022542	CPR
0000	0002	R 001215	DLZ	0000	R 014102	DPR	0000	R 006736	DWEEK	0000	R 022276	DXE1	0000	R 022277	DXE2

	R	015456	EQH	0000	R	015324	EQTOT
00000	R	000771	HE2	000n	R	00103	HOL
00000	R	022155	ICLR	000n	I	01046	ICREW
00000	I	012200	DELTA	000n	I	000014	IDM
00000	I	0027206	TE03	000n	I	003576	IEQ
00000	I	003242	IEQS	000n	I	022263	IERR
00000	I	022134	IFULL	000n	I	001117	IGATE
00002	I	0005320	IMHS	0002	I	00736	IM2
00000	I	023532	INDEX	000n	I	023532	INDX
00000	I	001163	IQUT	000n	I	023272	IPER
00000	I	005022	IRLC	000n	I	005522	IRMAX
00000	I	005262	IRNZ	000n	I	023272	IRPER
00000	I	005762	IS	000n	I	022156	ISDAY
00000	I	001424	ITTYP	000n	I	007472	IVDL
00000	I	006570	IVMT	000n	I	007720	IVNT
00000	I	000154	IW	000n	I	001462	IWA
00000	I	022151	INFEK	000n	I	022246	IWX
00000	I	022177	IX5	000n	I	022202	IX5C
00000	I	022140	IX5M	000n	I	000002	IX6
00000	I	022161	IX8	000n	I	022145	IX8M
00000	I	022162	I1	000n	I	022176	I2
00000	I	022271	I8	000n	I	022153	J
00000	I	022200	JSIG	000n	I	000067	JUNK
00000	I	022200	J2	000n	I	022203	J3
00000	I	022254	J7	000n	I	022253	J8
00000	I	000126	KON	000n	I	022214	K1
00000	I	022323	K5	000n	I	022324	K6
00000	I	022256	L1	000n	I	022257	L2
00000	I	022330	L6	000n	I	022255	L9
00000	I	022303	N	000n	I	001342	NDEQT
00000	I	022240	NDF	000n	I	022241	NDL
00000	I	022163	NF	000n	I	000140	NHOL
00000	I	022323	NSE2	000n	I	02233	NSE3
00000	I	022327	NX	000n	I	022307	N1
00000	R	002174	PROD	000n	R	004702	RPR
00000	R	014004	SLH	000n	R	022247	SUM
00000	R	015040	TCL	000n	R	022301	TIME
00002	R	002314	TTJ	000n	R	022304	TX
00000	R	022004	WUC	000n	R	014706	WUP
00000	R	022001	XJE3	000n	R	021770	XJL
00000	R	022316	XX	000n	R	022264	X1
00000	R	022321	X5	000n	R	022270	X6
00000	R	022313	Y1	000n	R	022314	Y2

99
00
10
11
12
20
21
30
31
40
41

```

00104 11*      IDTE(150),JRANK(150),IVNZ(150)          142
00106 12*      C*****MISCELLANEOUS**                   200
00107 13*      DIMENSION MON(12),IDM(12),JUNK2(31),JUNK(31),KON(10),NHOL(12), 201
00107 14*      1 IW(370),DWEEK(7),HE1(20),HE2(20),XJUNK1(30)                   202
00107 15*      C*****INPUT-OUTPUT GATES**                 220
00110 16*      DIMENSION HOL(36),IGATE(36),IOUT(36)                   222
00110 17*      C*****IX4** EQUIPMENT INVENTORY IN DEPOT          230
00111 18*      DIMENSION IEQ1(251),IEQN0(251),EQC(251),NDEQT(251),ISEQ(251) 231
00111 19*      C*****IX5** JOB TYPE                      240
00112 20*      DIMFNSCN ITTYP(30),IWA(30),IWB(30),IWC(30),IWD(30),IESD(30), 241
00112 21*      1 ILD(30),SUT(30),ICRS(30),ICRN(30),HT1(30),HT2(30)           242
00112 22*      C*****IX5C** BASIC CREWS                      250
00113 23*      DIMENSION PROD(110),IE01(110),IE02(110),IE03(110),ILAB(110),HCST(1 251
00113 24*      110),HCOST(110),IEQS(110),IEQN(110)                   252
00113 25*      C*****IX5E** BASIC CREW EQUIPMENT          260
00114 26*      DIMENSION IEQ(250),IN0(250)                   261
00114 27*      C*****IX9** RECURRING JOBS                  270
00115 28*      DIMENSION IRTYP(80),IRMT(80),RPR(80),IRLC(80),IRSZ(80),IRNZ(80), 271
00115 29*      1 IRMIN(80),IRMAX(80),IRDL(80),IS(80),IRPER(80),IRNT(80),XMULT(80), 272
00115 30*      2 IPER(80),IRTPE(80)                   273
00115 31*      C*****IX10** INVENTORY                      280
00116 32*      DIMENSION IVTYP(150),IVMT(150),IVMIN(150),IVMAX(150),IVDL(150),IVN 281
00116 33*      1T(150),INDX(150),ICREW(150,6),IETC(150),IDELTA(150),TOJ(150), 282
00116 34*      2 INDEX(150),WPR(150),DPR(150),COST(150),XJUNK(150)           283
00116 35*      C*****MULTIPLE DIMENSIONS**                 290
00117 36*      DIMENSION SLH(3,30),SE1H(3,30),SE2H(3,30),SE3H(3,30),WUA(3,30), 291
00117 37*      1 WUP(3,30),TCL(3,30),TCE(3,30),EQTOT(3,30),EQH(3,30,25)          292
00120 38*      DIMENSION XJL(3),XJE1(3),XJE2(3),XJE3(3),WUC(3,30)           3710
00121 39*      EQUIVALENCE (IPER,IPER),(IRTYP,IRTPE),(INDX,INDEX),(HCST,HCOST) 3800
00122 40*      IFULL=0                                     3890
00123 41*      READ 905 (I,IX4M,IX5M,IX5CM,IX5EM,IX6M,IX6ZM,IX8M,IX9M,INVMAX, 3900
00123 42*      1. IYEAR)                                     3901
00140 43*      PRINT 931 (IX4M,IX5M,IX5CM,IX5EM,IX6M,IX6ZM,IX8M,IX9M,INVMAX) 3910
00153 44*      IWEEK=0                                     4000
00154 45*      JINX=0                                     4005
00155 46*      DO 410 I=1,INVMAX                         4100
00160 47*      DO 410 J=1,6                           4200
00163 48*      410 ICREW(I,J)=0                         4300
00166 49*      DO 400 I=1,INVMAX                         4400
00171 50*      CPR(I)=.000001                         4410
00172 51*      400 IVTYP(I)=9999                      4500
00174 52*      IX10=1                                     4600
00175 53*      KON(10)=1                           4700
00174 54*      DO 16  I=1,9                           4800
00201 55*      16 J=10-I                           4900
00202 56*      16 KON(J)=8*KON(J+1)                   5000
00204 57*      READ 905 J,(NHOL(I),I=1,12)           5100
00213 58*      IHOL=1                                     5200
00214 59*      READ 909 ICLR,ISDAY,(DWEEK(I),I=1,7)  5300
00224 60*      READ 900 (MON(I),I=1,12)           5400
00232 61*      READ 901 (IDM(I),I=1,12)           5500
00240 62*      K=0                                     5501
00241 63*      DO 45  I=1,12                         5502
00244 64*      45 IF (NHOL(I),EQ,999)  GO TO 65  5503
00246 65*      45 K=K+1                           5504
00250 66*      65 PRINT 932 (NHOL(I),I=1,K)          5505
00256 67*      MULT=5-ISDAY                         5510
00257 68*      IF (MULT,LT,0)  MULT=0             5515

```

```

00261 690      NMULT=MULT
00262 700      1102 I1=0
00263 710      IOUT(1)=1
00264 720      READ 900 (HOL(1),I=1,36)
00272 730      1 READ 901 (IGATE(I),I=1,36)
00300 740      IF (IOUT(1),LT,1) GO TO 2
00302 750      PRINT 950 (HOL(1),(IGATE(I),I=1,36))
00311 760      2 IF (IGATE(2),LT,1) GO TO 3
00313 770      READ 901 (IOUT(1),I=1,36)
00321 780      3 IF (IOUT(2),LT,1) GO TO 46
00323 790      PRINT 950 (HOL(2),(IOUT(I),I=1,36))
00332 800      46 IF (IGATE(3),LT,1) GO TO 47
00334 810      READ 906 HE1(1),HE2(1),I,NF,CF
00343 820      READ 906 HE1(2),HE2(2),I,NE1,CE1
00352 830      READ 906 HE1(3),HE2(3),I,NF2,CE2
00361 840      READ 906 HE1(4),HE2(4),I,NE3,CE3
00370 850      READ 906 HE1(5),HE2(5),I,NL,CL
00377 860      47 IF (IOUT(3),LT,1) GO TO 48
00401 870      PRINT 974
00403 880      PRINT 983
00405 890      PRINT 975
00407 900      PRINT 928 (HE1(1),HE2(1),NF,CF)
00415 910      PRINT 928 (HE1(2),HE2(2),NE1,CE1)
00423 920      PRINT 928 (HE1(3),HE2(3),NF2,CE2)
00431 930      PRINT 928 (HE1(4),HE2(4),NF3,CE3)
00437 940      PRINT 928 (HE1(5),HE2(5),NL,CL)
00445 950      48 IF (IGATE(4),LT,1) GO TO 49
00447 960      DO 52 I=1,IX4M
00452 970      READ 906 (HE1(I),HE2(I),IEQI(I),IEQNO(I),EQC(I))
00452 980      C MAXIMUM EQUIPMENT INVENTORY
00461 990      IF (IEQI(I),EQ,999) GO TO 49
00463 1000      52 IX4=1
00465 1010      PRINT 929
00467 1020      STOP
00470 1030      49 IF (IOUT(4),LT,1) GO TO 4
00472 1040      PRINT 950 (HOL(4))
00475 1050      DO 50 I=1,IX4
00500 1060      PRINT 976 (HE1(I),HE2(I),I,IEQI(I),IEQNO(I),EQC(I))
00510 1070      50 CONTINUE
00512 1080      4 IF (IGATE(5),LT,1) GO TO 20
00514 1090      IF (IOUT(5),EQ,1) PRINT 933
00517 1100      I=1
00517 1110      C JOB TYPE INDEX
00520 1120      I1=1
00520 1130      C CREW TYPE INDEX OVER ALL NOT WITHIN JOB
00521 1140      I2=1
00521 1150      C EQUIPMENT TYPE INDEX
00522 1160      5 READ 902 (ITTYP(I),IWA(I),IWB(I),IWC(I),IWD(I),IESD(I),ILD(I),SUTL
00522 1170      I1),HT1(I),HT2(I)
00536 1180      ICRS(I)=1
00537 1190      IF (ITTYP(1),EQ,9999) GO TO 20
00541 1200      IX5=1
00542 1210      IF (I,GT,IX5M) GO TO 9200
00542 1220      C MAXIMUM JOB TYPES
00544 1230      IF (IOUT(5),LT,1) GO TO 6
00546 1240      PRINT 951 (HT1(I),HT2(I),ITTYP(I),I,IWA(I),IWB(I),IWC(I),IWD(I),IE
00546 1250      ISD(I),ILD(I),SUT(I),ICRS(I))
00564 1260      PRINT 952

```

```

00566 127* 6 JSIG=0
00566 128* C CREW STARTING INDEX
00567 129* READ 903 JUNK1(1),PROD(11),IE01(11),IE02(11),IE03(11),ILAB(11),(J
00567 130* LUNK1(J),J=2,14),JUNK2(1),PROD(11+1),IE01(11+1),IE02(11+1),IE03(11+
00567 131* 21),ILAB(11+1),(JUNK2(J1),J1=2,14)
00615 132* 8 IEQS(11)=12
00616 133* ICRN(1)=1
00617 134* IX5C=1L
00620 135* IF( 11.GE.IX5CM) GO TO 9210
00620 136* C MAXIMUM BASIC CREW
00622 137* J3=12
00623 138* HCST(11)=IE01(11)+CE1+IE02(11)*CE2+IE03(11)*CE3+ILAB(11)*CL
00624 139* DO 9 J1=2,16,2
00627 140* IF (JUNK1(J1).GE.97) GO TO 10
00631 141* IF (JUNK1(J1),EQ.0) GO TO 10
00633 142* IEQN(11)=12
00634 143* IX5F=12
00635 144* IF (12.GT.IX5EM) GO TO 9220
00637 145* DO 13 I4=1,IX4
00642 146* I5=14
00643 147* IF (IEQ1(I5),EQ.JUNK1(J1)) GO TO 7
00645 148* 13 CONTINUE
00647 149* GO TO 9370
00650 150* 7 IEQ(12)=15
00651 151* IN0(12)=JUNK1(J1+1)
00652 152* HCST(11)=HCST(11)+IN0(12)*EQC(15)
00653 153* I2=12+1
00653 154* CLIMIT ON PRINT
00654 155* 9 J2=J1+2
00656 156* 10 IF (IOUT(5).LT.1) GO TO 11
00660 157* J5=12-1
00661 158* PRINT_953 (1,11,PROD(11),IE01(111),IE02(111),IE03(11),ILAB(11)+HCST(1
00661 159* 111),IEQS(11),IEQN(11),((IEQ(J4),IN0(J4)),J4=J3,J5))
00702 160* 11 II=II+1
00703 161* IF (JUNK1(J2),EQ.99) GO TO 15
00705 162* IF (JSIG,EQ.1) GO TO 6
00707 163* 14 DO 12 J1=1,14
00712 164* 12 JUNK1(J1)=JUNK2(J1)
00714 165* JSIG=1
00715 166* GO TO 8
00716 167* 15 I=I+1
00717 168* GO TO 5
00720 169* 20 IF (IGATE(6).LT.1) GO TO 24
00722 170* I=1
00722 171* C INDEX-INDEX
00723 172* II=1
00723 173* C LIST INDEX
00724 174* 21 IHYS(I)=11
00725 175* READ 904 IHY(I), (JUNK1(K),XJUNK(K) ,K=1,11)
00735 176* IF (I.GT.IX6M) GO TO 9230
00737 177* IF (IHY(I),EQ.999) GO TO 24
00741 178* K=I-1
00742 179* IF (K,EQ.0) GO TO 22
00744 180* IF (IHY(I),NE,IHY(K)) GO TO 22
00746 181* I=K
00747 182* 22 IX6=I-
00750 183* DO 23 K=1,11
00750 184* C MAXIMUM HIGHWAY LIST

```

```

00753 185* IF (JUNK1(K),EQ.999) GO TO 39 15500
00755 186* 1HZ(I1)=JUNK1(K) 15600
00756 187* DLZ(I1)=XJUNK(K) 15700
00757 188* IHYN(I)=I1 15800
00758 189* IX6Z=I1 15900
00761 190* IF (I1,GT,IX6ZM) GO TO 9240 15910
00763 191* 23 I1=I1+1 16000
00765 192* 39 I=I+1 16100
00766 193* GO TO 21 16200
00767 194* 24 IF (IOUT(6),LT,1) GO TO 28 16300
00771 195* PRINT 995 16310
00773 196* PRINT 974 16320
00775 197* DO 25 J=1,IX6 16400
01000 198* I1=IHYS(J) 16500
01001 199* I2=IHYN(J) 16600
01002 200* I3=J 16700
01003 201* PRINT 954(HOL(6),I3,THY(I3),I1,I2,(1HZ(I4),I4=I1,I2)) 16800
01016 202* PRINT 955(DLZ(I4),I4=I1,I2) 16900
01024 203* 25 CONTINUE 17000
01024 204* 28 IF (LIGATE(7),LT,1) GO TO 34 17100
01030 205* DO 37 I=1,366 17200
01033 206* 37 IW(I)=0 17300
01035 207* 29 READ 905 I,(JUNK(K),K=1,25) 17400
01044 208* IF (I,EQ,999) GO TO 32 17410
01046 209* DO 31 K=1,25 17500
01051 210* IF (JUNK1(K)=998) 30,29,32 17600
01054 211* 30 J=JUNK(K) 17700
01055 212* IF (IW(J),EQ,0) GO TO 31 17800
01057 213* PRINT 959 (J,IW(J),I) 17900
01064 214* 31 IW(J)=I 18000
01066 215* GO TO 29 18100
01067 216* 32 DO 33 I=1,369 18200
01072 217* IF (IW(I+1),GT,0) GO TO 33 18300
01074 218* IW(I+1)=IW(I) 18400
01075 219* 33 CONTINUE 18500
01077 220* 34 IF (IOUT(7),LT,1) GO TO 40 18600
01101 221* PRINT 956 18700
01103 222* I=4 18800
01104 223* JUNK1(I)=I 18900
01105 224* DO 38 J=1,30 19000
01110 225* 38 JUNK1(J+1)=JUNK1(J)+1 19100
01112 226* PRINT 957 (JUNK1(J),J=1,31) 19200
01120 227* PRINT 965 (IW(I1),I1=1,3) 19300
01126 228* DO 36 J=1,12 19400
01131 229* K=J 19500
01132 230* K1=IDM(J1) 19600
01133 231* DO 35 K2=1,K1 19700
01136 232* JUNK1(K2)=IW(I1) 19800
01137 233* 35 I=I+1 19900
01141 234* PRINT 958 (MON(K),(JUNK(K2),K2=1,K1)) 20000
01150 235* 36 CONTINUE 20100
01152 236* 40 IF (LIGATE(8),LT,1) GO TO 43 20200
01154 237* K=I 20300
01155 238* 41 READ 901 (JUNK1(J),J=1,40) 20400
01163 239* DO 42 J=1,40 20500
01166 240* IF (JUNK1(J),EQ,998) GO TO 43 20600
01170 241* IX8=K 20700
01171 242* X=JUNK1(J) 20800

```

01172	243	TT(K)=X/60.0	20900
01173	244	IF (JUNK1(LJ),EQ.99) TT(K)=99999.9	20910
01175	245	IF (JUNK1(J),EQ.0) TT(K)=-99999.9	20920
01177	246	42 K=K+1	21000
01201	247	GO TO 41	21100
01202	248	43 IF (IOUT(8),LT,1) GO TO 51	21200
01204	249	PRINT 950	21210
01206	250	PRINT 960	21220
01210	251	PRINT 975	21230
01212	252	K=1	21300
01213	253	441 DO 44 L=1,10	21310
01216	254	JUNK1(L)=K	21400
01217	255	XJUNK(L)=TT(K)	21410
01220	256	IF (TT(K),GT,0.01) GO TO 44	21420
01222	257	TT(K)=0.0	21430
01223	258	JUNK1(L)=99999	21440
01224	259	44 K=K+1	21500
01226	260	M=10	21550
01227	261	IF (K,GT,94) M=4	21600
01231	262	PRINT 992 ((JUNK1(L),XJUNK(L)),L=1,M)	21650
01240	263	IF (K,LE,94) GO TO 441	21700
01242	264	51 IF (IGATE(9),LT,1) GO TO 55	21800
01242	265	C READ RECURRING JOBS	21900
01244	266	DO 54 I=1,IX9M	22000
01247	267	READ 907 (IRTYP(I),IRMT(I),RPR(I),IRLC(I),IRSZ(I),IRNZ(I),IRMIN(I)	22100
01247	268	I,IRMAX(I),IRDL(I),IS(I),IRPER(I),IRNT(I))	22200
01265	269	IF (IRTP(E(I),EQ,9999.9,AND,I,EQ,1) IX9=1	22300
01267	270	IF ((IRTP(E(I),EQ,9999)) GO TO 55	22400
01271	271	IX9=1	22500
01272	272	DO 53 J=1,IX5	22600
01275	273	IF (IRTP(E(I),NE,ITYP(J)) GO TO 53	22700
01277	274	IF ((IESD(J),LT,ILD(J)) GO TO 56	22800
01301	275	NTST=0	22900
01302	276	IF (IRPER(J),NE,0) GO TO 315	23000
01304	277	PRINT 969	23200
01306	278	STOP	23300
01307	279	315 IF (IESD(J)-365+NTST*IPER(J)) 300,305,310	23400
01312	280	300 NTST=NTST+1	23500
01313	281	GO TO 315	23600
01314	282	310 IS(I)=1	23700
01315	283	XMULT(I)=(IESD(J)-365+NTST*IPER(J))/IPER(J)	23800
01316	284	GO TO 54	23900
01317	285	305 IS(I)=1	24000
01320	286	XMULT(I)=1.0	24100
01321	287	GO TO 54	24200
01322	288	56 IS(I)=IESD(J)	24300
01323	289	XMULT(I)=1.0	24400
01324	290	GO TO 54	24500
01325	291	53 CONTINUE	24600
01326	292	•DIAGNOSTIC• THE TRANSFER TO 9960 IS BAD BECAUSE 9960 IS NOT IN THE INNERMOST DO OF A NEST.	
01327	292	9960 PRINT 996	24700
01331	293	PRINT 966 (I,IRTYP(I),IRMT(I),RPR(I),IRLC(I),	24800
01331	294	IRSZ(I),IRNZ(I),IRMIN(I),IRMAX(I),IRDL(I),IS(I),IRPER(I),IRNT(I))	24801
01350	295	STOP	24810
01351	296	54 CONTINUE	24900
01353	297	GO TO 9960	25100
01354	298	55 IF (IOUT(9),LT,1) GO TO 58	25200
01356	299	PRINT 994	25300

```

01360 300* PRINT 974 25310
01362 301* DO 57 I=1,IX9 25400
01365 302* PRINT 966 (I,IRTYP(I),IRMT(I),RPR(I),IRLC(I), 25550
01365 303* IIRSZ(I),IRNZ(I),IRMIN(I),IRMAX(I),IRDL(I),IS(I),IRPER(I),IRNT(I)) 25600
01404 304* 57 CONTINUE 25700
01406 305* 58 JLAST=0 25800
01407 306* PRINT 931 (IX4M,IX5M,IX5CH,IX5EM,IX6M,IX6ZM,IX8M,IX9M) 25810
01421 307* PRINT 935 (IX4,IX5,IX5C,IX5E,IX6,IX6Z,IX8,IX9) 25812
01433 308* IDAY=0 25900
01434 309* ISDAY=ISDAY+1 26000
01435 310* II=2 26100
01436 311* IF (ICLRL.EQ.0) II=3 26200
01440 312* IPLAN=0 26210
01441 313* 12#1 26220
01441 314* C ENTRY AT DAY CHANGE 26225
01442 315* 700 DO 703 I=12,II 26300
01445 316* XJL(I)=0.0 26310
01446 317* XJE1(I)=0.0 26320
01447 318* XJE2(I)=0.0 26330
01450 319* XJE3(I)=0.0 26340
01451 320* DO 702 J=1,IX5 26500
01451 321* C OVER ALL JOB TYPES 26600
01454 322* WUC(I,J)=0.0 26650
01455 323* SLH(I,J)=0. 26700
01456 324* SE1H(I,J)=0. 26800
01457 325* SE2H(I,J)=0. 26900
01460 326* SE3H(I,J)=0. 27000
01461 327* WUA(I,J)=0. 27100
01462 328* TCL(I,J)=0. 27200
01463 329* TCEII,J)=0. 27300
01464 330* EQTOT(I,J)=0. 27400
01465 331* 1104 DO 701 K=1,IX4 27500
01470 332* ISEQ(K)=0 27510
01471 333* 701 EQHLI,J,K)=0. 27600
01473 334* 702 CONTINUE 27700
01475 335* 703 CONTINUE 27800
01477 336* NSF=0 27810
01500 337* II=0 27811
01501 338* INVSUM=0 A27811
01502 339* DO 1038 I=1,IX10 27812
01505 340* IF (VPR(I).LE.0.0) IVTYP(I)=0 27813
01507 341* J=IVTYP(I) 27814
01510 342* IF (J.EQ.0) GO TO 1036 27815
01512 343* IF (J.EQ.9999) GO TO 1040 27816
01514 344* INVSUM=INVSUM+1 A27816
01515 345* II=0 27817
01516 346* GO TO 1038 27818
01517 347* 1036 IF (II.NE.0) IX10=II 27819
01521 348* 1038 CONTINUE 27820
01523 349* 1040 IF (II.NE.0) IX10=II 27821
01525 350* IVTYP(IX10)=9999 27822
01526 351* NSE1=0 27824
01527 352* NSE2=0 27830
01530 353* NSE3=0 27840
01531 354* NSL=0 27850
01532 355* KHL=0 27860
01533 356* DO 1042 I=1,IX10 27861
01534 357* IF (VPR(I).GT.0.0) GO TO 1042 27862

```

PAGE: 11

```

01540 358*      DO 1043  J=1,6          27863
01543 359*      ICREW(I,J)=0          27864
01544 360*      1043  CONTINUE        27865
01546 361*      1042  CONTINUE        27866
01550 362*      IF(IPLAN.EQ.1)  GO TO 709 27868
01552 363*      IDAY=IDAY+1          27870
01553 364*      ISDAY=ISDAY+1          27880
01554 365*      IF (ISDAY.EQ.8)  ISDAY=1 27880
01556 366*      IF (IDAY.EQ.1)  GO TO 69 27881
01560 367*      709  IF (IDAY.NE.NHOL(IHOL))  GO TO 442 27890
01562 368*      IF (ISDAY.LT.6)  GO TO 440 27900
01564 369*      NHOL(IHOL)=NHOL(IHOL)*I 27910
01565 370*      GO TO 442          27920
01566 371*      440  KHOL=1          27930
01567 372*      442  IF (ISDAY.NE.1)  GO TO 69 27940
01571 373*      IF (IDAY.EQ.1)  GO TO 69 27952
01573 374*      DO 444  I=1,IX10 27960
01576 375*      JIND(I)=0          27970
01577 376*      IF (IVTYP(I).EQ.0)  JIND(I)=9 27980
01601 377*      444  CONTINUE        27990
01603 378*      ISPEC=0          27993
01604 379*      MULT=5          28000
01605 380*      IF (NHOL(IHOL).LT.IDAY+5)  MULT=4 28010
01607 381*      NMULT=MULT          28015
01610 382*      69  ISIGE=1          28020
01611 383*      70  IF (ILAST.GT.IDAY)  GO TO 80 28030
01611 C READ REGULAR JOBS
01613 385*      GO TO 100          29000
01614 386*      71  READ 907  (IVTYP(I),IVMT(I),VPR(I),IVLC(I),IVSZ(I),IVNZ(I),IVMIN(I) 29300
01614 387*      1,IVMAX(I),IVDL(I),IDTE(I),IVNT(I)) 29400
01631 388*      IVDL(I)=IVDL(I)+IDTE(I)          29500
01632 389*      IF (IVTYP(I).EQ.9999)  GO TO 63 29600
01634 390*      DO 62  K=1,IX5 29700
01637 391*      INDX(I)=K          29800
01640 392*      IF (INVSUM.GT.INVMAX+1)  GO TO 80 29810
01642 393*      IF (IVTYP(I).EQ.ITTYP(K))  GO TO 63 29900
01644 394*      62  CONTINUE        30000
01646 395*      GO TO 302          30100
01647 396*      63  IF (IDTE(I).GE.ILAST)  GO TO 630 30200
01651 397*      PRINT 936  (ILAST, IDTE(I)) 30210
01655 398*      PRINT 966  (I,IVTYP(I),IVMT(I),VPR(I),IVLC(I), 30220
01655 399*      1IVSZ(I),IVNZ(I),IVMIN(I),IVMAX(I),IVDL(I),IDTE(I)) 30230
01672 400*      GO TO 631          30290
01673 401*      630  ILAST=IDTE(I)          30300
01674 402*      631  IF (IDTE(I).GT.365)  GO TO 80 30400
01676 403*      JSIGE=0          30500
01677 404*      GO TO 150          30600
01700 405*      64  IF (IOUT(10).LT.1)  GO TO 72 30700
01702 406*      PRINT 966  (I,IVTYP(I),IVMT(I),VPR(I),IVLC(I), 30800
01702 407*      1IVSZ(I),IVNZ(I),IVMIN(I),IVMAX(I),IVDL(I),IDTE(I),INDX(I)) 30900
01720 408*      72  GO TO 70          31000
01721 409*      80  ISIGE=2          31100
01721 410*      C ENTRY FOR RECURRING JOBS
01722 411*      J=1          31200
01723 412*      175  IF (IS(J).LE.7)  GO TO 100 31400
01725 413*      704  IF ((IS(J)+IFULL).NE.(IDAY+7))  GO TO 84 31500
01727 414*      100  I=JINX          31550
01730 415*      IF (I.NE.0)  GO TO 102 31575

```

```

01732 4160 DO 101 I1=1,INVMAX 31600
01735 4170 L=11 31700
01736 4180 IF (IVTYP(I),EQ.0000) GO TO 102 31800
01740 4190 IF (IVTYP(I),NE.9999) GO TO 101 31900
01742 4200 IVTYP(I+1)=9999 32000
01743 4210 IX10=IX10+1 32100
01744 4220 IF (IX10 .GT. INVMAX-2) GO TO 325 32200
01746 4230 GO TO 102 32300
01747 4240 101 CONTINUE 32600
01751 4250 102 JINX=0 32650
01752 4260 IF (JSIG=2) 71,81,103 32700
01755 4270 103 IF (JSIG=4) 91,93,96 32800
01760 4280 81 IF (IRTYP(J),NE.2) GO TO 302 32900
01762 4290 IF (IS(J),LT.7) GO TO 304 33000
01764 4300 IF (ISDAY,GT.5) GO TO 61 33100
01766 4310 GO TO 301 33200
01767 4320 304 JI=IS(J)+ISDAY-1 33300
01770 4330 J2=J1/7 33400
01771 4340 J3=J1-7*J2 33500
01772 4350 IF (LJ3,EQ.6,OR,J3,EQ,0) GO TO 61 33600
01774 4360 301 IF (IS(J),NE,NHOL(IHOL)) GO TO 302 33700
01776 4370 61 IS(J)=IS(J)+IPER(J) 33710
01777 4380 GO TO 175 33720
02000 4390 302 IF (INVSUM,GT,INVMAX-2) GO TO 325 33730
02002 4400 IVTYP(I)=IRTYP(J) 33800
02003 4410 IVMT(I)=IRMT(J) 33900
02004 4420 VPR(I)=XMULT(J)*RPR(J) 34000
02005 4430 XMULT(J)=1,0 34100
02006 4440 IVLC(I)=IRLC(J) 34200
02007 4450 IVSZ(I)=IRSZ(J) 34300
02010 4460 IVNZ(I)=IRNZ(J) 34400
02011 4470 IVMIN(I)=IRMIN(J) 34500
02012 4480 IVMAX(I)=IRMAX(J) 34600
02013 4490 IVDL(I)=IRDL(J)+IS(J) 34700
02014 4500 IDTE(I)=IS(J) 34800
02015 4510 IVNT(I)=IRNT(J) 34900
02016 4520 JSIG=1 35000
02017 4530 DO 303 K=1,IX5 35300
02022 4540 INDX(I)=K 35400
02023 4550 IF (IVTYP(I),EQ,ITTYP(K)) GO TO 150 35500
02025 4560 303 CONTINUE 35600
02027 4570 PRINT 927 35700
02031 4580 PRINT 966 (I,IVTYP(I),IVMT(I),VPR(I),IVLC(I), 35800
02031 4590 IVSZ(I),IVNZ(I),IVMIN(I),IVMAX(I),IVDL(I),IDTE(I),INDX(I)) 35900
02047 4600 3030 IVTYP(I)=0 35950
02050 4610 JINX=1 35960
02051 4620 VPR(I)=0.0 35975
02052 4630 GO TO 84 35980
02053 4640 150 CALL HZONE 36000
02054 4650 X=99,/60 36010
02055 4660 IF (TTJ(I),LT,X) GO TO 155 36015
02057 4670 PRINT 993 36020
02061 4680 PRINT 966 (I,IVTYP(I),IVMT(I),VPR(I),IVLC(I), 36030
02061 4690 IVSZ(I),IVNZ(I),IVMIN(I),IVMAX(I),IVDL(I),IDTE(I),INDX(I)) 36031
02077 4700 GO TO 3030 36040
02100 4710 155 JI=INDX(I) 37200
02101 4720 TOJ(I)=8.0-SUT(J1)-2.0*TTJ(I) 37300
02102 4730 IF (JSIG,EQ,0) GO TO 64 37400

```

02104	474*	IS(J)=IS(J)+IPER(J)	38100
02105	475*	K=INDX(J)	38200
02106	476*	IF (ILD(K),LT,IESD(K)) GO TO 82	38300
02110	477*	IF (IS(J),LE,ILD(K)) GO TO 820	38400
02112	478*	IS(J)=367	38500
02113	479*	GO TO 83	38600
02114	480*	820 IF (IS(J),LT,IESD(K)) GO TO 830	38650
02116	481*	82 IF (IS(J),LE,ILD(K)) GO TO 83	38700
02120	482*	IF (IS(J),GE,IESD(K)) GO TO 83	38800
02122	483*	830 IS(J)=IESD(K)	38900
02123	484*	83 IF (IOUT(11),LT,1) GO TO 175	39000
02125	485*	PRINT 966 (1,IVTYP(1),IVMT(1),VPR(1),IVLC(1),	39100
02125	486*	IVSZ(1),IVNZ(1),IVMIN(1),IVMAX(1),IVDL(1),IDTE(1),INDX(1))	39200
02143	487*	GO TO 175	39300
02144	488*	325 IF FULL=IFULL+1	39310
02145	489*	PRINT 925 (IFULL,1DAY)	39320
02151	490*	J=IX9+10	39330
02152	491*	84 J=J+1	39400
02153	492*	IF (J,LE,IX9) GO TO 175	39500
02155	493*	IF (IFULL,EQ,0) GO TO 840	39502
02157	494*	IF (J,GT,IX9) GO TO 840	39504
02161	495*	IFULL=IFULL+1	39506
02162	496*	GO TO 70	39508
02163	497*	840 IF (ISDAY,NE,1,AND,1DAY,NE,1) GO TO 3090	39510
02165	498*	IF (MULT,EQ,0) GO TO 3090	39515
02167	499*	IF (IPLAN,EQ,1) GO TO 3090	39520
02171	500*	DO 3020 I=1,IX4	39525
02174	501*	3020 NDEQ(I)=MULT*IEQNO(I)=ISEQ(I)	39530
02176	502*	NDF=MULT*NF=NSF	39535
02177	503*	NOL=MULT*NLU=NSL	39537
02200	504*	NDE1=MULT*NNE1=NSE1	39540
02201	505*	NDE2=MULT*NNE2=NSE2	39545
02202	506*	NDE3=MULT*NNE3=NSE3	39550
02203	507*	DO 3095 J=1,IX5	39557
02206	508*	WUP(1,J)=0,0	39558
02207	509*	3095 WUP(2,J)=0,0	39559
02211	510*	GO TO 2022	39560
02212	511*	3090 MULT=1	39562
02213	512*	IPLAN=0	39565
02214	513*	90 IF (INVSUM,GT,INVMAX=2,AND,1W(1DAY+3),GT,1,AND,1W(1DAY+3),LT,4)	39590
02214	514*	1 GO TO 3096	39591
02216	515*	IF (1W(1DAY+3),NE,3) GO TO 95	39600
02220	516*	ISIG=3	39700
02221	517*	GO TO 100	39800
02222	518*	91 IVTYP(I)=3000	39900
02223	519*	VPR(I)=1,0	39910
02224	520*	IDTE(I)=1DAY	40000
02225	521*	IF (IOUT(12),LT,1) GO TO 92	40100
02227	522*	PRINT 954 (HOL(12),1,1W(1DAY+3),IVTYP(I))	40200
02235	523*	92 ISIG=4	40300
02236	524*	GO TO 100	40400
02237	525*	93 IVTYP(I)=3500	40500
02240	526*	IDTE(I)=1DAY+1	40600
02241	527*	VPR(I)=1,0	40610
02242	528*	IF (IOUT(13),LT,1) GO TO 105	40700
02244	529*	PRINT 954 (HOL(13)+1,1W(1DAY+3),IVTYP4++)	40800
02252	530*	GO TO 105	40900
02253	531*	95 IF (1W(1DAY+3),NE,2) GO TO 105	41000

02255	532•	ISIG=5	41100
02256	533•	GO TO 100	41200
02257	534•	3096 PRINT 926 (1DAY, IW(1DAY+3))	41210
02263	535•	GO TO 105	41220
02264	536•	96 IVTYP(I)=2000	41300
02265	537•	IDTE(I)=1DAY	41400
02266	538•	VPR(I)=1.0	41410
02267	539•	IF (IOUT(14), LT, 1) GO TO 105	41500
02271	540•	PRINT 954 (HOL(14), 1, IW(1DAY+3), IVTYP(I))	41600
02277	541•	105 ISPEC=0	41700
02300	542•	ISIG=0	41710
02301	543•	DO 124 I=1,IX10	41715
02304	544•	I1=I	41720
02305	545•	JIND(I)=0	41725
02306	546•	IF (1DAY, LT, IDTE(I)) GO TO 452	41730
02310	547•	J=IVTYP(I)	41740
02311	548•	IF (J, EQ, 0, OR, J, EQ, 9999) GO TO 452	41745
02313	549•	IF (J, EQ, 2000, OR, J, EQ, 3000) GO TO 250	41750
02315	550•	IF (J, EQ, 3500) GO TO 1046	41760
02317	551•	IF (ISDAY+GT, 5, OR, KHL, EQ, 1) GO TO 462	41765
02321	552•	GO TO 453	41767
02322	553•	1046 ISIG=11	41770
02323	554•	GO TO 124	41780
02324	555•	452 JIND(I)=9	41900
02324	556•	C JOB IS NOT YET DISCOVERED	42000
02325	557•	GO TO 123	42100
02326	558•	453 IF (J, EQ, 1000) GO TO 454	42200
02326	559•	C RELEASE AUXILIARY CREWS	42300
02330	560•	Y=VPR(I)	42400
02331	561•	DO 112 J=1,6	42500
02334	562•	IF (1CREW(I, J)) 111,113,112	42600
02337	563•	111 1CREW(I, J)=0	42700
02340	564•	112 CONTINUE	42800
02342	565•	113 K=IW(1DAY+3)	43300
02343	566•	CPR(1)= .00000001	43350
02344	567•	J=INDX(I)	43400
02345	568•	K1=0	43500
02346	569•	IWX=IWA(J)	43600
02347	570•	114 K1=K1+1	43700
02350	571•	K2=IWX/KON(K)	43800
02351	572•	K2=(IWX-K2*KON(K))/KON(K+1)	43900
02352	573•	IF (K2, EQ, 0) GO TO 123	44000
02354	574•	IF (K1-2) 116,117,115	44100
02357	575•	115 IF (K1-4) 118,119,119	44200
02362	576•	116 IWX=IWB(J)	44300
02363	577•	K=IW(1DAY+2)	44400
02363	578•	C DAY -1	44500
02364	579•	GO TO 114	44600
02365	580•	117 IWX=INC(J)	44700
02366	581•	K=IW(1DAY+1)	44800
02366	582•	C DAY -2	44900
02367	583•	GO TO 114	45000
02370	584•	118 IWX=IWD(J)	45100
02371	585•	K=IW(1DAY)	45200
02371	586•	C DAY -3	45300
02372	587•	GO TO 114	45400
02373	588•	119 SUM=0.0	45600
02374	589•	DO 121 J=1,6	45700

```

02377 590* J1=ICREW(I,J) 45800
02400 591* IF (J1.EQ.0) GO TO 122 45900
02402 592* 121 SUM=SUM+PROD(J1) 46000
02404 593* 122 IF (SUM.LE.0.0) GO TO 123 46100
02406 594* X=TOJ(I)*SUM 46200
02407 595* J1=(Y/X)+0.5 46300
02410 596* Y=Y-X 46400
02411 597* 1E (Y.LE.0.0) Y=0.0 46500
02413 598* IETC(I)=IDAY+J1 46600
02414 599* IDELTA(I)=IVDL(I)-IETC(I) 46700
02415 600* GO TO 124 46900
02416 601* 454 JIND(I)=1 46910
02417 602* 123 IETC(I)=10000 47300
02420 603* IDELTA(I)=10000 47400
02421 604* 124 CONTINUE 47500
02423 605* IF (ISIG.EQ.0) GO TO 110 47510
02425 606* I1=ISIG 47520
02426 607* 250 ISPEC=1 47530
02427 608* J=IVTYP(I1) 47535
02430 609* DO 450 K=1,IX5 47540
02433 610* K=K1 47550
02434 611* IF (J.EQ.ITTYP(K1)) GO TO 451 47560
02436 612* 450 CONTINUE 47570
02440 613* PRINT 927 47571
02442 614* PRINT 966 (I1,IVTYP(I1),IVHT(I1),VPR(I1),IVLC(I1),IVSZ(I1), 47572
02442 615* IVNZ(I1),IVMIN(I1),IVMAX(I1),IVDL(I1),IDTE(I1),INDX(I1)) 47573
02460 616* IVTYP(I1)=0 47576
02461 617* VPR(I1)=0.0 47577
02462 618* 451 INDX(I1)=K 47580
02463 619* 110 DO 139 I=1,IX4 47600
02463 620* C DAILY INVENTORY IGNORES PERMANENT CREWS INITIALLY 47700
02466 621* 139 NDEQT(I)=MULT*IEQNO(I)=ISEQ(I) 47800
02470 622* NDF=MULT*NF-NSF 47900
02471 623* NDE1=MULT*NE1-NSE1 48000
02472 624* NDE2=MULT*NE2-NSE2 48100
02473 625* NDE3=MULT*NE3-NSE3 48200
02474 626* NDL=MULT*NL-NSL 48300
02475 627* PAYROL=MULT*(NF*CF+NL*CL+NE1*CE1+NE2*CE2+NE3*CE3)*8.0 48305
02476 628* IF (NDL+NDE1+NDE2+NDE3.LE.0) GO TO 770 48310
02500 629* IF (ISPEC.EQ.0) GO TO 106 48400
02502 630* K=INDX(I1) 48710
02503 631* J1=ICRS(K) 49100
02504 632* J2=ICRN(K) 49200
02505 633* DO 436 J3=JL,J2 49300
02510 634* J=IVTYP(I1) 49350
02511 635* J4=IEQS(J3) 49400
02512 636* J5=IEQN(J3) 49500
02513 637* J9=ILAB(J3) 49510
02514 638* K1=IE01(J3) 49520
02515 639* K2=IE02(J3) 49530
02516 640* K3=IE03(J3) 49540
02517 641* J8=0 49590
02520 642* DO 426 J7=1,1000 49600
02520 643* C MULTIPLE OF BASIC CREW 49700
02523 644* L9=J7*J9 49710
02524 645* L1=J7*K1 49900
02525 646* L2=J7*K2 50000
02526 647* L3=J7*K3 50100

```

02527	648*	IF (L9,GT,NDL) GO TO 428	50110
02531	649*	IF (L1,LE,NDE1) GO TO 420	50200
02533	650*	L2=L2+L1-NDE1	50300
02534	651*	L1=NDF1	50400
02535	652*	420 IF (L2,LE,NDE2) GO TO 422	50500
02537	653*	L3=L3+L2-NDE2	50600
02540	654*	L2=NDF2	50700
02541	655*	422 IF (L3,GT,NDE3) GO TO 428	50800
02543	656*	DO 424 J6=J4,J5	50900
02546	657*	K4=IEQ(J6)	51000
02547	658*	IF (J7,IN0(JA),GT,NDEQT(K4)) GO TO 428	51100
02551	659*	424 CONTINUE	51200
02553	660*	J8=J7	51300
02555	661*	IERR=101	51400
02556	662*	GO TO 899	51500
02557	663*	428 X=8.0	51600
02560	664*	X1=L1-K1	51601
02561	665*	X2=L2-K2	51602
02562	666*	X3=L3-K3	51603
02563	667*	X9=L9-J9	51604
02564	668*	IF (J,EQ,3000) X=10.0	51610
02566	669*	J=INDX(II)	51615
02567	670*	DO 432 M=1,3	51700
02572	671*	SLH(M,J)=5LH(M,J)+X*X9	51800
02573	672*	SE1H(M,J)=SE1H(M,J)+X*X1	51900
02574	673*	SE2H(M,J)=SE2H(M,J)+X*X2	52000
02575	674*	SE3H(M,J)=SE3H(M,J)+X*X3	52100
02576	675*	TCL(M,J)=TCL(M,J)+X*(X9*CL+X1*CE1+X2*CE2+X3*CE3)	52200
02577	676*	DO 430 J6=J4,J5	52300
02602	677*	J7=IEQ(J6)	52400
02603	678*	X6=IN0(J6)*J8	52410
02604	679*	EQH(M,J,J7)=EQH(M,J,J7)+X6*X	52500
02605	680*	430 EQTOT(M,J)=EQTOT(M,J)+X*X6*EQC(J7)	52600
02607	681*	432 CONTINUE	52700
02611	682*	NDL=NDL-J8*J9	52800
02612	683*	NSL=NSL+J8*J9	52810
02613	684*	NDE1=NDE1-J8*K1	52900
02614	685*	NSE1=NSE1+J8*K1	52910
02615	686*	NDE2=NDE2-J8*K2	53000
02616	687*	NSE2=NSE2+J8*K2	53010
02617	688*	NDE3=NDE3-J8*K3	53100
02620	689*	NSE3=NSE3+J8*K3	53110
02621	690*	DO 434 J6=J4,J5	53200
02624	691*	J7=IEQ(J6)	53300
02625	692*	ISEQ(J7)=ISEQ(J7)+IN0(J6)*J8	53310
02626	693*	434 NDEQT(J7)=NDEQT(J7)+IN0(J6)*J8	53400
02630	694*	436 CONTINUE	53500
02632	695*	VPR(II)=0.0	53550
02633	696*	IVTYP(II)=0	53600
02634	697*	GO TO 105	53610
02635	698*	106 I8=1	53700
02636	699*	177 I=18	53800
02637	700*	COST(I)=0.0	53900
02640	701*	IF (JIND(I),EQ,9) GO TO 140	54000
02642	702*	J8=1	54100
02643	703*	176 J=JB	54200
02644	704*	IEX=1	54300
02645	705*	IF (ICREW(I,J),EQ,01) GO TO 140	54400

02647	706*	141 J1=ICREW(I,J)	54500
02650	707*	172 IF(NDL,LT,ILAB(J1)) GO TO 161	54600
02652	708*	K1=IE01(J1)	54700
02653	709*	K2=IE02(J1)	54800
02654	710*	K3=IE03(J1)	54900
02655	711*	IF (K1,LE,NDE1) GO TO 125	55000
02657	712*	K2=K2+K1-NDE1	55100
02660	713*	K1=NDE1	55200
02661	714*	125 IF (K2,LE,NDE2) GO TO 126	55300
02663	715*	K3=K3+K2-NDE2	55400
02664	716*	K2=NDE2	55500
02665	717*	126 IF (K3,GT,NDE3) GO TO 161	55600
02666	718*	C THIS PATH MEANS ALL PERSONNEL ARE AVAILABLE *****	55700
02667	719*	SUM=COST(I)+ILAB(J1)+CL+K1*CE1+K2*CE2+K3*CE3	55800
02670	720*	J2=IEQS(J1)	55900
02671	721*	J3=IEQN(J1)	56000
02672	722*	DO 107 J4=J2,J3	56100
02675	723*	J5=IEQ(J4)	56200
02676	724*	IF (NDEQT(J5),LT,INO(J4)) GO TO 161	56300
02700	725*	107 CONTINUE	56400
02702	726*	DO 157 J4=J2,J3	56500
02705	727*	IF (INO(J4),EQ,0) GO TO 157	56510
02707	728*	J5=IEQ(J4)	56600
02710	729*	NDEQT(J5)=NDEQT(J5)=INO(J4)	56700
02711	730*	SUM=SUM+INO(J4)*EQC(J5)	56800
02712	731*	157 CONTINUE	56900
02714	732*	NDL=NDL-ILAB(J1)	57000
02715	733*	NDE1=NDE1-K1	57100
02716	734*	NDE2=NDE2-K2	57200
02717	735*	NDE3=NDE3-K3	57300
02720	736*	COST(I)=SUM+COST(I)	57400
02721	737*	IF (IEX=2) 129,142,142	57500
02724	738*	129 J8=J8+1	57600
02725	739*	IF (J8,LE,6) GO TO 176	57700
02727	740*	140 I8=I8+1	57800
02730	741*	IF (I8,LE,IX10) GO TO 177	57900
02732	742*	GO TO 132	58000
02733	743*	161 IF (IEX=2) 130,146,146	58100
02736	744*	130 DO 131 I=1,IX10	58200
02741	745*	DO 131 J=1,6	58300
02741	746*	C RELEASE ALL CREWS INVENTORY AFTER PERMANENT CHECK IS NEGATIVE	58400
02744	747*	131 ICREW(I,J)*0	58500
02747	748*	GO TO 110	58600
02750	749*	132 DO 133 I=1,IX10	58700
02750	750*	C RANK BY IDELTA	58800
02753	751*	JRANK(I)=I	58900
02754	752*	133 JUNK1(I)=IDELTA(I)	59000
02756	753*	ISIG=0	59010
02757	754*	CALL RANK	59015
02760	755*	138 I2=1	60400
02761	756*	178 I=JRANK(I2)	60500
02762	757*	IEX=2	60550
02763	758*	Y=VPR(I)	60575
02763	759*	C NONSENSE JOB	60600
02764	760*	IF (JIND(I),EQ,9) GO TO 179	60700
02766	761*	IFI(JIND(I),EQ,1) GO TO 160	60800
02770	762*	J=1	61000
02771	763*	ISIG=0	61200

```

02772 764* 148 IF(IVTYP(I),EQ.9999) GO TO 160 61250
02774 765* IF(IY,LE,0) GO TO 160 61270
02776 766* IF (IDELTA(I),GE,0,AND. IDELTA(I),NE,10000) GO TO 160 61300
02776 767* C JOB IS ON, OR AHEAD OF SCHEDULE 61300
03000 768* IF (ICREW(I,1),EQ,0) GO TO 162 61500
03000 769* C AT LEAST ONE CREW IS ASSIGNED 61800
03002 770* IF (ICREW(I,6),EQ,0) GO TO 141 61900
03004 771* 144 PRINT 967 (HOL(19),IDAY+1,1,1,IVTYP(I),IETC(I),IVDL(I),ICREW(L,K)) 62000
03004 772* IK=1,6)) 62100
03021 773* GO TO 160 62200
03022 774* 142 DO 143 J2=1,6 62300
03025 775* J3=J2 62400
03026 776* IF (ICREW(I,J2),EQ,0) GO TO 145 62500
03030 777* 143 CONTINUE 62600
03032 778* 145 ICREW(I,J3)=J1 62700
03033 779* IF(IVMIN(I),GE,0) IVMIN(I)==(IDAY+IVMIN(I)) 62800
03035 780* SUM=0.0 62900
03036 781* DO 1452 J2=1,J1 62950
03041 782* J4=ICREW(I,J2) 63000
03042 783* IF(J4,NE,0) GO TO 1454 63100
03044 784* IF(J4,LT,0) J4=-J4 63200
03046 785* 1452 SUM=SUM+PROD(J4) 63300
03050 786* 1454 X=SUM+TOJ(I) 63400
03051 787* J2=(Y/X)+0.5 63500
03052 788* Y=Y-X 63550
03053 789* IF (Y,LE,0,0) Y=0.0 63575
03055 790* 280 IETC(I)=IDAY+J2 63600
03056 791* 285 IDELTA(I)=IVDL(I)=IETC(I) 63700
03057 792* IF (IEX,LE,3) GO TO 148 63800
03061 793* ICREW(I,J3)=0=ICREW(I,J3) 63900
03062 794* IEX=4 64000
03063 795* GO TO 171 64100
03064 796* 146 J2=J+1 64200
03065 797* IF (ICREW(I,J),EQ,0) GO TO 162 64300
03067 798* J2=J-1 64400
03070 799* DO 147 J3=1,J2 64500
03073 800* IF (ICREW(I,J3),EQ,ICREW(I,J)) GO TO 146 64600
03075 801* 147 CONTINUE 64700
03077 802* GO TO 148 64800
03100 803* 162 IF (IEX,NE,2) GO TO 169 64900
03102 804* IEX=3 65000
03103 805* GO TO 180 65100
03104 806* 169 IF (IEX,NE,4) GO TO 165 65200
03106 807* IEX=5 65300
03107 808* 180 L=INDX(I) 65400
03110 809* L1=ICRS(L) 65500
03111 810* L2=ICRN(L) 65600
03112 811* L=0 65700
03113 812* DO 163 L4=L1,L2 65800
03116 813* L=L+1 65850
03117 814* XJUNK(L)=8.0+HCOST(L4)/(PROD(L4)*TOJ(I)) 65900
03120 815* 163 JUNK1(L)=L4 66000
03122 816* DO 164 L4=1,L 66300
03125 817* DO 164 L5=L4,L 66400
03130 818* IF (XJUNK(L4),LE,XJUNK(L5)) GO TO 164 66500
03132 819* X=XJUNK(L4) 66550
03133 820* XJUNK(L4)=XJUNK(L5) 66575
03134 821* XJUNK(L5)=X 66600

```

03135	822*	L3=JUNK1(L4)	66700
03136	823*	JUNK1(L4)=JUNK1(L5)	66900
03137	824*	JUNK1(L5)=L3	67100
03140	825*	164 CONTINUE	67200
03143	826*	L1=0	67300
03144	827*	I65 L1=L1+1	67400
03145	828*	IF (L1.GT.L) GO TO 168	67500
03147	829*	DO 170 L5=1,6	67600
03152	830*	IF (ICREW(I,L5).EQ.0) GO TO 275	67700
03154	831*	IF (ICREW(I,L5).EQ.JUNK1(L1)) GO TO 165	67800
03156	832*	IF (ICREW(I,L5).EQ.-JUNK1(L1)) GO TO 165	67900
03160	833*	170 CONTINUE	68000
03162	834*	275 J1=JUNK1(L1)	68100
03163	835*	J2=JUNK1(1)	68150
03164	836*	IF (XJUNK(L1).LT.1.15*XJUNK(1)) GO TO 172	68200
03166	837*	168 JIND(I)=1	68300
03167	838*	IF (IEX.LE.3) GO TO 160	68400
03171	839*	GO TO 171	68500
03172	840*	160 IF (IEX.GT.3) GO TO 171	68600
03174	841*	I2=I2+1	68700
03175	842*	IF (I2.LE.IX10) GO TO 178	68800
03177	843*	179 IFX=4	68900
03200	844*	ISIG=0	69000
03201	845*	I2=1	69100
03202	846*	181 I=JRank(I2)	69200
03203	847*	IF (IVMIN(I).GT.0) GO TO 171	69300
03205	848*	IF ((IVMIN(I)+IETC(I)).LE.0) GO TO 171	69400
03207	849*	IF (JIND(I).NE.0) GO TO 171	69500
03211	850*	J=1	69600
03212	851*	GO TO 148	69700
03213	852*	171 I2=I2+1	69800
03214	853*	IF (I2.LE.IX10) GO TO 181	69900
03216	854*	IF (ISIG.NE.0) GO TO 179	70000
03216	855*	C JOB X INITIALLY**CONVERT TO MAN HOURS	70100
03220	856*	DXL=NDL*8	70200
03221	857*	DXE1=NDE1*8	70300
03222	858*	DXE2=NDF2*8	70400
03223	859*	DXE3=NDE3*8	70500
03224	860*	DO 2004 I=1,IX4	70600
03227	861*	2004 NDEQT(I)=8*NDEQT(I)	70610
03231	862*	ISIG=0	71300
03231	863*	C INDICATES RANKING BY TRAVEL TIME IS NOT YET DONE	71400
03232	864*	I2=1	71500
03232	865*	C DO LOOP OVER ALL JOBS TO SPOT EMERGENCIES	71600
03233	866*	3006 DPR(I2)=0	71700
03234	867*	Y=ILAB(I)	71800
03235	868*	X1=IE01(I)	71900
03236	869*	X2=IE02(I)	72000
03237	870*	X3=IE03(I)	72100
03240	871*	I=I2	72200
03241	872*	J=IVTYP(I)	72300
03242	873*	IF (JIND(I).EQ.9) GO TO 222	72600
03244	874*	IF (J.NE.1000) GO TO 222	73000
03246	875*	J=INDX(I)	73350
03247	876*	TIME=VPR(I)+SUT(J)	73400
03250	877*	TIMET=TIME+2*TTJ(I)	73450
03251	878*	IF (IDTE(I).GT.IDAY) GO TO 222	73500
03253	879*	K1=IEQS(I)	73970

```

03254 880* K2=IEQN(1) 73980
03255 881* DO 2006 K3=K1,K2 73990
03260 882* K4=1EQ(K3) 74000
03261 883* IF (NDEQT(K4),LT,IN0(K3)*TIME) GO TO 203 74010
03263 884* 2006 CONTINUE 74020
03265 885* IF (DXL,LT,Y*TIME) GO TO 203 74100
03267 886* IF (X1*TIME,LE,DXE1) GO TO 200 74200
03271 887* X2=X2+X1-DXE1 74300
03272 888* X1=DXE1 74400
03273 889* 200 IF (X2*TIME,LE,DXE2) GO TO 201 74500
03275 890* X3=X3+X2-DXE2 74600
03276 891* X2=DXE2 74700
03277 892* 201 IF (X3*TIME,GT,DXE3) GO TO 203 74800
03301 893* 202 DO 2010 M=1,3 74840
03304 894* WUA(M,1)=WUA(M,1)+TIME 74850
03305 895* SLH(M,1)=SLH(M,1)+TIME*Y 74860
03306 896* SE1H(M,1)=SE1H(M,1)+TIME*X1 74870
03307 897* SE2H(M,1)=SE2H(M,1)+TIME*X2 74880
03310 898* SE3H(M,1)=SE3H(M,1)+TIME*X3 74900
03311 899* TCL(M,1)=TIME*(Y*CL+X1*CE1+X2*CE2+X3*CE3+TCL(M,1)) 74910
03312 900* VPR()=0.0 74915
03313 901* J1NX=1 74916
03314 902* IVTYP()=0 74917
03315 903* DO 2008 N=K1,K2 74920
03320 904* IF (IN0(N),EQ,0) GO TO 2008 74930
03322 905* K3=IEQN(1) 74940
03323 906* EQH(M,1,K3)=EQH(M,1,K3)+IN0(N)*TIME 74950
03324 907* EQTOT(M,1)=EQTOT(M,1)+IN0(N)*TIME*EQC(K3) 74960
03325 908* NDEQT(K3)=NDEQT(K3)+IN0(N)*TIME 74970
03326 909* 2008 CONTINUE 74980
03330 910* 2010 CONTINUE 74990
03332 911* DXL=DXL-Y*TIME 75400
03333 912* DXE1=DXE1-X1*TIME 75500
03334 913* DXE2=DXE2-X2*TIME 75600
03335 914* DXE3=DXE3-X3*TIME 75700
03336 915* GO TO 222 76100
03337 916* 203 IF (ISIG,NE,0) GO TO 206 76200
03337 917* C CHECK TO SEE IF RANKING IS REQUIRED 76300
03341 918* ISIG=1 76400
03342 919* DO 204 J1=1,IX10 76500
03345 920* JUNK1(J1)=J1 76600
03346 921* 204 XJUNK1(J1)=TTJ(J1) 76700
03346 922* C ORIGINAL INVENTORY INDEX AND TRAVEL TIME 76800
03350 923* DO 205 J1=1,IX10 76900
03350 924* C RANK ON TRAVEL TIME 77000
03351 925* DO 205 J2=J1,IX10 77100
03356 926* J4=JUNK1(J1) 77050
03357 927* J5=JUNK1(J2) 77075
03360 928* IF (XJUNK1(J4),LE,XJUNK1(J5)) GO TO 205 77200
03362 929* J3=JUNK1(J2) 77300
03363 930* JUNK1(J2)=JUNK(J1) 77500
03364 931* JUNK1(J1)=J3 77700
03365 932* 205 CONTINUE 77900
03370 933* 206 DO 218 J1=1,IX10 78600
03370 934* C CHECK FOR CREW 78700
03373 935* J2=JUNK1(J1) 78800
03374 936* IF (JIND(J2),EQ,9) GO TO 218 78900
03376 937* DO 210 J3=1,6 79000

```

03376	938*	C AUXILIARY CREW CHECK	79100
03401	939*	J4=7-J3	79200
03402	940*	IF (ICREW(J2,J4)) 207,210,218	79300
03405	941*	207 IF (J4,EQ,6) GO TO 221	79400
03407	942*	DO 208 J5=J4,5	79500
03412	943*	IF (ICREW(J2,J4),EQ,ICREW(J2,J5+1)) GO TO 210	79600
03414	944*	208 CONTINUE	79700
03416	945*	221 J5=ICREW(J2,J4)	79800
03418	946*	C CREW HAS NOT BEEN CHECKED	79900
03417	947*	IF (TX,GE,TIME) GO TO 211	80000
03421	948*	J6=IEQS(J5)	80100
03422	949*	J7=IEQN(J5)	80200
03423	950*	DO 209 JB=J6,J7	80300
03424	951*	J9=J8	80400
03427	952*	IF (IEQ(J8),EQ,2) GO TO 211	80500
03431	953*	209 CONTINUE	80600
03433	954*	GO TO 210	80700
03434	955*	211 IF ((8*ILAB(J5)+DXL),LT,(2.0*TIME)) GO TO 240	80800
03436	956*	IF ((8*(IE01(J5)+IE02(J5)+IE03(J5))+DXE1+DXE2+DXE3),GE,TIME) GO TO 210	80900
03436	957*	10 219	81000
03440	958*	IF ((IE01(J5)+IE02(J5)+IE03(J5)),LT,1) GO TO 210	81100
03442	959*	210 CONTINUE	81200
03444	960*	218 CONTINUE	81300
03446	961*	DO 318 J1=1,IX10	81400
03451	962*	J2=JUNK1(J1)	81500
03452	963*	DO 290 K1=1,6	81600
03455	964*	J4=K1	81700
03456	965*	214 IF (ICREW(J2,J4),LE,0) GO TO 318	81800
03460	966*	IF (J4,EQ,1) GO TO 220	81900
03462	967*	J6=J4-1	82000
03463	968*	J5=1	82100
03464	969*	215 IF (ICREW(J2,J5),EQ,ICREW(J2,J4)) GO TO 318	82200
03466	970*	J5=J5+1	82300
03467	971*	IF (J5,GT,J6) GO TO 220	82400
03471	972*	GO TO 215	82500
03472	973*	220 J5=ICREW(J2,J4)	82600
03473	974*	J6=IEQS(J5)	82700
03474	975*	J7=IEQN(J5)	82800
03475	976*	IF (TX,GE,TIME) GO TO 217	82900
03477	977*	DO 216 JB=J6,J7	83000
03502	978*	J9=J8	83100
03503	979*	IF (IEQ(J9),EQ,1) GO TO 217	83200
03505	980*	216 CONTINUE	83300
03507	981*	GO TO 318	83400
03510	982*	217 IF ((8*ILAB(J5)+DXL),LT,(2.0*TIME)) GO TO 290	83500
03512	983*	IF ((8*(IE01(J5)+IE02(J5)+IE03(J5))+DXE1+DXE2+DXE3),GE,TIME) GO TO 210	83600
03512	984*	10 219	83700
03514	985*	290 CONTINUE	83800
03516	986*	318 CONTINUE	83900
03520	987*	IPRINT=110	84000
03521	988*	PRINT 1000, IPRINT	84100
03524	989*	222 I2=I2+1	84300
03525	990*	IF (I2,LE,IX10) GO TO 3006	84350
03527	991*	GO TO 223	84375
03530	992*	219 X1=TOJ(I)-TIME	91400
03531	993*	DPR(I)=DPR(I)+X1*PROD(J5)	91500
03532	994*	COST(I)=COST(I)-X1*HCOST(J5)	91600
03533	995*	IF (J4,EQ,6) GO TO 213	91700

03535	9960	DO 212 J5=J4,5	91800
03540	9970	212 ICREW(J2,J5)=ICREW(J2,J5+1)	91900
03542	9980	213 TX=TX+TIME*INO(J9)	92000
03543	9990	TX=TX+TIME*INO(J9)	92100
03544	10000	DXL=DXL+TIME*ILAB(J5)	92200
03545	10010	DXE1=DXE1+TIME*IE01(J5)	92300
03546	10020	DXE2=DXE2+TIME*IE02(J5)	92400
03547	10030	DXE3=DXE3+TIME*IE03(J5)	92500
03550	10040	GO TO 202	92600
03551	10050	223 ISIG=0	84400
03552	10060	DO 763 I=1,IX10	84500
03552	10070	C DO OVER ALL JOBS IN INVENTORY	84600
03555	10080	IF (JIND(I),EQ,9) GO TO 763	84700
03557	10090	J=INDX(I,1)	84800
03557	10100	C TYPE INDEX OF ITH JOB	84900
03560	10110	DO 762 K=1,6	85000
03560	10120	C BASIC CREW LIST OF ITH JOB	85100
03563	10130	L=ICREW(I,K)	85200
03564	10140	IF (L,EQ,0) GO TO 763	85300
03566	10150	IF (L,LT,0) L=-L	85400
03570	10160	Z=TOJ(I)	85450
03571	10170	X= Z*PROD(L)	85500
03571	10180	C DAILY PRODUCTION	85600
03572	10190	VPR(I)=VPR(I)-X	85602
03573	10200	TIME=0,0	85605
03574	10210	IF (VPR(I)) 1118,1120,1130	85610
03577	10220	1118 TIME=VPR(I)/PROD(L)	85620
03600	10230	VPR(I)=0,0	85630
03601	10240	CPR(I)=0,0	85635
03602	10250	JINX=1	85640
03603	10260	Z=TOJ(I)=TIME	85700
03604	10270	X= Z*PROD(L)	85710
03605	10280	GO TO 1122	85720
03606	10290	1120 CPR(I)=0,0	85735
03607	10300	GO TO 1122	85740
03610	10310	1130 CPR(I)=CPR(I)+X	85750
03611	10320	1122 DO 761 M=1,3	85800
03614	10330	WUA(M,J)=WUA(M,J)+X	85900
03615	10340	SLH(M,J)=SLH(M,J)+ILAB(L)*Z	86000
03616	10350	SE1H(M,J)=SE1H(M,J)+IE01(L)*Z	86100
03617	10360	SE2H(M,J)=SE2H(M,J)+IE02(L)*Z	86200
03620	10370	SE3H(M,J)=SE3H(M,J)+IE03(L)*Z	86300
03621	10380	TCL(M,J)=TCL(M,J)+ Z*(ILAB(L)*CL+IE01(L)*CE1+IE02(L)*CE2+IE03(L)*CE3)	86400
03621	10390	1118	86500
03622	10400	N1=IEQS(L)	86600
03623	10410	N2=IEQN(L)	86700
03624	10420	DO 760 N=N1,N2	86800
03627	10430	N3=IEQ(N)	86900
03630	10440	EQH(M,J,N3)=EQH(M,J,N3)+INO(N)*Z	87000
03631	10450	760 EQTOT(M,J)=EQTOT(M,J)+(INO(N)* Z*EQC(N3))	87100
03633	10460	761 CONTINUE	87200
03635	10470	1124 IF (TIME,LE,0,0) GO TO 762	87205
03637	10480	DO 650 N1=1,IX10	A 87205
03642	10490	IF (J,NE,INDX(N1)) GO TO 650	B 87205
03644	10500	IF (CPR(N1),LE,0,0,OR,JIND(N1),EQ,9,OR,IETC(N1),EQ,1DAY) GO TO 650 C 87205	CC87205
03646	10510	IF (TIME,LE,4,0,TTJ(N1)) GO TO 650	DA 87205
03650	10520	Z=TIME=Z+TTJ(N1)	D87205
03651	10530	TIME=Z	DA 87205

03652	1054*	X=Z*PROD(L)	DD87205
03653	1055*	VPR(N1)=VPR(N1)+X	E 87205
03654	1056*	Z1=0.0	F 87205
03655	1057*	IF (VPR(N1)) .LT. 651,652,653	G 87205
03660	1058*	651 Z1=-VPR(N1)/PROD(L)	H 87205
03661	1059*	VPR(N1)=0.0	I 87205
03662	1060*	CPR(N1)=0.0	J 87205
03663	1061*	JINX=N1	JJ87205
03664	1062*	Z=TIME-Z1	K87205
03665	1063*	TIME=TIME-Z	KK87205
03666	1064*	X=Z*PROD(L)	L87205
03667	1065*	GO TO 1122	M 87205
03670	1066*	652 CPR(N1)=0.0	N 87205
03671	1067*	JINX=N1	NN87205
03672	1068*	TIME=0.0	NNN87205
03673	1069*	GO TO 1122	O 87205
03674	1070*	653 CPR(N1)=CPR(N1)+X	P 87205
03675	1071*	TIME=0.0	PP 87205
03676	1072*	GO TO 1122	Q 87205
03677	1073*	650-CONTINUE	R 87205
03701	1074*	DXL=DXL+TIME*ILAB(L)	87210
03702	1075*	DXE1=DXE1+TIME*IE01(L)	87215
03703	1076*	DXE2=DXE2+TIME*IE02(L)	87220
03704	1077*	DXE3=DXE3+TIME*IE03(L)	87225
03705	1078*	ICREW(I,K)=0	87230
03706	1079*	N1=IEQS(L)	87240
03707	1080*	N2=IEQN(L)	87250
03710	1081*	DO 1126 N=N1,N2	87260
03713	1082*	N3=IEQ(N)	87270
03714	1083*	NDEQT(N3)=NDEQT(N3)+TIME*INQ(N)	87280
03715	1084*	1126 CONTINUE	87290
03717	1085*	762 CONTINUE	87300
03721	1086*	763 CONTINUE	87305
03723	1087*	JSIG=1	A 83705
03724	1088*	7611 IF (JSIG,EQ.0) GO TO 2003	
03726	1089*	JSIG=0	87305000
03727	1090*	DO 7610 I=1,1X10	87305010
03732	1091*	IF (CPR(I),LE,0.0,OR,JIND(I),EQ,9) GO TO 7610	87305020
03734	1092*	J=ICREW(I,1)	87305030
03735	1093*	IF (J.EQ.0) GO TO 7610	87305040
03737	1094*	Z=4*TTJ(I)	87305050
03737	1095*	C MINIMUM TIME ACCEPTABLE	87305060
03740	1096*	L=ILAB(J)	87305070
03741	1097*	X1=IE01(J)	87305080
03742	1098*	X2=IE02(J)	87305090
03743	1099*	X3=IE03(J)	87305100
03744	1100*	X=DXL/L	87305110
03745	1101*	IF (X,LT,Z) GO TO 7610	87305120
03747	1102*	IF (X,GT,8.0) X=8.0	87305130
03751	1103*	Y1=DXE1	87305140
03752	1104*	Y2=DXE2	87305150
03753	1105*	Y3=DXE3	87305160
03754	1106*	7601 IF (X1+X,LT,Y1) GO TO 7600	87305170
03756	1107*	X2=X2+X1+Y1	87305180
03757	1108*	X1=Y1	87305190
03760	1109*	7600 IF (X2+X,LT,Y2) GO TO 7602	87305200
03762	1110*	X3=X3+X2-Y2	87305210
03763	1111*	X2=Y2	87305220

03764	11120	7602	IF (X3=X.LT.Y3) GO TO 7604	87305230
03766	11130	Z1=Y3/X3		87305240
03767	11140	7604	IF (Z1.LT.Z1 GO TO 7610	87305250
		X=Z1		87305260
03771	11150	K1=IEQS(J)		87305280
03772	11160	K2=IEQN(J)		87305290
03773	11170	DO 7620 K3=K1,K2		87305300
03777	11180	K4=INDX(K3)		87305310
04000	11200	IF (NDEQT(K4).GE.1NO(K3)*X) GO TO 7620		87305320
04002	11210	X=NDEQT(K4)/1NO(K3)		87305330
04003	11220	IF (X.LT.Z) GO TO 7610		87305340
04005	11230	7620 CONTINUE		87305350
04007	11240	JS1G=1		87305360
04010	11250	K=1NDX(1)		87305370
04011	11260	XX=X+2*TTJ(1)		87305380
04012	11270	Z=PROD(J1*XX		87305390
04013	11280	IF (Z.LT.VPR(1)) GO TO 7622		87305400
04015	11290	XX=VPR(1)/PROD(J)		87305410
04016	11300	X=XX+2*TTJ(1)		87305420
04017	11310	Z=VPR(1)		87305430
04020	11320	7622 DO 7624 M=1,3		87305440
04023	11330	WUA(M,K)=WUA(M,K)+Z		87305450
04024	11340	SLH(M,K)=SLH(M,K)+L*XX		87305460
04025	11350	SE1H(M,K)=SE1H(M,K1+X1)*XX		87305470
04026	11360	SE2H(M,K)=SE2H(M,K)+X2*XX		87305480
04027	11370	SE3H(M,K)=SE3H(M,K1+X3*XX		87305490
04030	11380	TCL(M,K)=TCL(M,K)+XX*(L*CL+X1*CE1+X2*CE2+X3*CE3)		87305500
04031	11390	DO 7624 N=K1,K2		87305510
04034	11400	IF (1NO(N1,EQ,0) GO TO 7624		87305520
04036	11410	K3=IEQ(N)		87305530
04037	11420	EQH(M,K,K3)=EQH(M,K,K31+1NO(N1)*XX		87305540
04040	11430	EQTOT(M,K)=EQTOT(M,K)+1NO(N1)*XX*EQCL(K31		87305550
04041	11440	NDEQT(K3)=NDEQT(K3)-X*1NO(N1		87305560
04042	11450	7624 CONTINUE		87305570
04045	11460	VPR(I)=VPR(I)-Z-.00001		87305580
04046	11470	IF (VPR(I).GT.0.01 GO TO 7626		87305590
04050	11480	CPR(I)=0.0		87305600
04051	11490	IV.TYP(I)=0		87305610
04052	11500	J=NX=1		87305615
04053	11510	VPR(I)=0.0		87305620
04054	11520	7626 DXL=DXL-L*X		87305630
04055	11530	DXE1=DXE1-X1*X		87305640
04056	11540	DXE2=DXE2-X2*X		87305650
04057	11550	DXE3=DXE3-X3*X		87305660
04060	11560	7610 CONTINUE		87305670
04062	11570	2003 IF (JS1G,NE,0) GO TO 7611		87305680
04064	11580	DO 20030 LL=I,IX10		A=87306
04067	11590	IF (IDTE(LL).GT.1DAY) GO TO 20030		A87306
04071	11600	J=1NDX(LL)		87T07
04072	11610	WUC(I,J)=WUC(I,J)+VPR(LL)		87306
04073	11620	20030 CONTINUE		87309
04075	11630	IF (1ISDAY.GT.5,OR,1DAY.EQ,1NHOL(1HOL)) GO TO 770		A87309
04077	11640	DO 2002 M=1,3		87310
04102	11650	XJL(M)=XJL(M)+DXL		87320
04103	11660	XJE1(M)=XJE1(M1+DXE1		87330
04104	11670	XJE2(M)=XJE2(M)+DXE2		87340
04105	11680	2002 XJE3(M1=XJE3(M1+DXE3		87350
04107	11690	770 M=1		87800

04110	1170*	IF (NHOL(IHOL), EQ, 1DAY) IHOL=IHOL+1	87805
04112	1171*	IF (ISDAY, LT, 6, AND, KHOL, NE, 1) GO TO 771	87810
04112	1172*	C OFF DAY	87820
04114	1173*	IF (TCL(1,5)+TCL(1,31)+TCL(1,4), LE, 0,0) GO TO 772	87830
04116	1174*	771 M=1	87840
04117	1175*	DO 1110 K=2,IX5	87850
04122	1176*	1110 WUP(1,K)=WUP(1,K)-WUA(1,K)	87860
04124	1177*	IF LLOUT(17), EQ, 0) GO TO 772	87870
04126	1178*	PRINT 970 (IWEK, DWEK (ISDAY), IDAY, IW (IDAY+3))	88000
04134	1179*	773 IF (IPLAN, EQ, 0) GO TO 1112	88040
04136	1180*	DO 1106 K=1,IX5	88070
04141	1181*	1106 WUP(1,K)=WUP(2,K)	88080
04143	1182*	1112 PRINT 930 (INVSUM)	88100
04146	1183*	PRINT 971	88130
04150	1184*	PRINT 972	88200
04152	1185*	ISIG=5	88300
04153	1186*	X1=0.0	88410
04154	1187*	X2=0.0	88420
04155	1188*	DO 777 I=1,IX5	88500
04160	1189*	X=TCL(M,I)*EQTOT(M,I)	88600
04161	1190*	X1=X1+X	88610
04162	1191*	Z=WUC(M,I)*X	88620
04163	1192*	IF (Z, LE, 0,0) GO TO 777	88700
04165	1193*	Y=SLH(M,I)+SE1H(M,I)+SE2H(M,I)+SE3H(M,I)	88800
04166	1194*	X2=X2+Y	88810
04167	1195*	IF (ISIG, NE, 5) GO TO 775	88900
04171	1196*	PRINT 975	89000
04173	1197*	ISIG=0	89100
04174	1198*	775 PRINT 973(I, ITTYP(I), HT1(I), HT2(I), SLH(M,I), SE1H(M,I), SE2H(M,I), SE	89200
04174	1199*	13H(M,I), Y, TCL(M,I), X, WUP(M,I), WUA(M,I), WUC(M,I))	89300
04214	1200*	ISIG=ISIG+1	89400
04215	1201*	777 CONTINUE	89500
04217	1202*	X3=0.0	89510
04220	1203*	X4=0.0	89512
04221	1204*	X5=0.0	89514
04222	1205*	X6=0.0	89516
04223	1206*	X7=0.0	89518
04224	1207*	DO 1044 I=1,IX5	89520
04227	1208*	X3=X3+SLH(M,I)	89525
04230	1209*	X4=X4+SE1H(M,I)	89530
04231	1210*	X5=X5+SE2H(M,I)	89535
04232	1211*	X6=X6+SE3H(M,I)	89540
04233	1212*	X7=X7+TCL(M,I)	89545
04234	1213*	1044 CONTINUE	89550
04236	1214*	K1=X1+0.5	89555
04237	1215*	K2=X2+0.5	89560
04240	1216*	K3=X3+0.5	89565
04241	1217*	K4=X4+0.5	89570
04242	1218*	K5=X5+0.5	89575
04243	1219*	K6=X6+0.5	89580
04244	1220*	K7=X7+0.5	89585
04245	1221*	PRINT 987 (K3, K4, K5, K6, K7, K1)	89590
04256	1222*	X=XJL(M)+XJE1(M)+XJE2(M)+XJE3(M)	89600
04257	1223*	Y=CL*XJL(M)+CE1*XJE1(M)+CE2*XJE2(M)+CE3*XJE3(M)	89610
04260	1224*	PRINT 988 (XJL(M), XJE1(M), XJE2(M), XJE3(M), X, Y)	89620
04270	1225*	IF (M, EQ, 1) PRINT 934 (PAYROL)	89625
04274	1226*	PRINT 950	89630
04276	1227*	PRINT 979	

```

04300 1228* PRINT 980 (IEQ1(I),I=1,IX4)
04300 1229* C COLUMN HEADINGS FOR EQUIPMENT TYPES
04306 1230* ISIG=5
04307 1231* DO 782 I=1,IX5
04307 1231* C ROWS OR JOB TYPES
04312 1232* IF (EQTOT(M,I),LE,0,0) GO TO 782
04314 1234* IF (ISIG,LT,5) GO TO 780
04316 1235* ISIG=0
04317 1236* PRINT 975
04321 1237* 780 DO 7801 K=1,IX4
04324 1238* 7801 JUNK1(K)=EQH(M,I,K)+0.5
04326 1239* PRINT 982 (ITTYP(I),EQTOT(M,II),(JUNK1(K),K=1,IX4))
04336 1240* ISIG=ISIG+1
04337 1241* 782 CONTINUE
04341 1242* DO 785 K=1,IX4
04344 1243* SUM=0.0
04345 1244* SUM1=0.0
04346 1245* DO 783 I=1,IX5
04351 1246* SUM1=SUM1+EQTOT(M,I)
04352 1247* 783 SUM=SUM+EQH(M,I,K)
04354 1248* JUNK1(K)=SUM+.5
04355 1249* JUNK2(II)=SUM1+.5
04356 1250* 785 CONTINUE
04360 1251* PRINT 983 (JUNK2(II),(JUNK1(K),K=1,IX4))
04367 1252* 772 I=1 90030
04370 1253* I=1 90040
04371 1254* IF (PLAN,EQ,1) GO TO 1028 90045
04373 1255* IF (M,NE,1) GO TO 774 90050
04375 1256* IF (ISDAY,EQ,7) GO TO 776 90060
04377 1257* IF (IDAY,NE,1YEAR) GO TO 700 90070
04401 1258* 776 K1=1 90072
04402 1259* K2=IDAY 90074
04403 1260* IF (IDAY,GT,7) K1=IDAY=ISDAY+1 90078
04405 1261* DO 1641 I=1,IX5 90082
04410 1262* 1641 WUC(2,I)=WUC(1,I) 90084
04412 1263* M=2 90090
04413 1264* IF (IOUT(18),EQ,0) GO TO 7730 90098
04415 1265* PRINT 984 (IWECK,NMULT,(IW(K+31,K=K1,K2)) 90099
04425 1266* 7730 IWECK=IWECK+1 A90099
04426 1267* GO TO 773 90100
04427 1268* 774 IF (M,EQ,3) STOP 90110
04431 1269* IF (IDAY,LT,1YEAR) GO TO 766 90120
04433 1270* M=3 90130
04434 1271* PRINT 985 90140
04436 1272* GO TO 773 90150
04437 1273* 766 I=2 90160
04440 1274* GO TO 700 90170
04441 1275* 9200 PRINT 920 92700
04443 1276* STOP 92710
04444 1277* 9210 PRINT 921 92720
04446 1278* STOP 92730
04447 1279* 9220 PRINT 922 92740
04451 1280* STOP 92750
04452 1281* 9230 PRINT 923 92760
04454 1282* STOP 92770
04455 1283* 9240 PRINT 924 92780
04457 1284* STOP 92790
04460 1285* 9370 PRINT 937 (JUNK(I)) 92800

```

04463	1286*	STOP	92810
04464	1287*	1028,12*1	93500
04465	1288*	I1=2	93600
04466	1289*	GO TO 700	93600
04467	1290*	899 PRINT 902 (IERR)	93800
04472	1291*	STOP	93900
04473	1292*	900 FORMAT (12A6)	94000
04474	1293*	901 FORMAT (14012)	94100
04475	1294*	902 FORMAT (14,4(1X,09),214,F4.1,2A6)	94200
04476	1295*	903 FORMAT (2(14,F5.1,311,1412))	94300
04477	1296*	904 FORMAT (13,1X,13,F3.1,10(1X,13,F3.1))	94400
04500	1297*	905 FORMAT (12,25131)	94500
04501	1298*	906 FORMAT (2A6,13,1X,13,1X,F5.2)	94600
04502	1299*	907 FORMAT (14,11,1X,F6.1,1X,13,2(1X,12),6(1X,13),1X,12)	94700
04503	1300*	908 FORMAT (214)	94800
04504	1301*	909 FORMAT (212,7A6)	94810
04505	1302*	920 FORMAT ('NUMBER OF JOB TYPES EXCEEDS MAXIMUM')	94820
04506	1303*	921 FORMAT ('NUMBER OF BASIC CREWS EXCEEDS MAXIMUM')	94830
04507	1304*	922 FORMAT ('NUMBER OF BASIC CREW EQUIPMENTS EXCEEDS MAXIMUM')	94840
04510	1305*	923 FORMAT ('NUMBER OF HIGHWAYS IN ZONE LIST EXCEEDS MAXIMUM')	94850
04511	1306*	924 FORMAT ('NUMBER OF ZONES IN ZONE LIST EXCEEDS MAXIMUM')	94860
04512	1307*	925 FORMAT ('INVENTORY BACKLOGGED',14,' DAYS ON DAY',14)	94870
04513	1308*	926 FORMAT ('WEATHER JOB SKIPPED DAY',14,' WEATHER',12,' INVENTORY I	94880
04513	1309*	15-FULL')	94881
04514	1310*	927 FORMAT ('0')	94890
04515	1311*	928 FORMAT (1H-2A6,16,F7.2)	94900
04516	1312*	929 FORMAT ('NUMBER OF EQUIPMENT TYPES IN INVENTORY EXCEEDS MAXIMUM')	94910
04517	1313*	930 FORMAT (1H+,110X,14,' JOBS')	94920
04520	1314*	931 FORMAT ('MAXIMA IX4=1,14,1 IX5=1,14,1 IX5C=1,14,1 IX5E=1,14,1 IX6=1,14,1 IX6Z=1,14,1 IX8=1,14,1 IX9=1,14,1 IX10=1,14,1')	94930
04520	1315*	932 FORMAT (10HOLIDAYS 1214)	94931
04521	1317*	932 FORMAT (10HOLIDAYS 1214)	94940
04522	1318*	933 FORMAT ('1',10X,'JOB TYPES AND BASIC CREW DATA')	94950
04523	1319*	934 FORMAT ('+',85X,'PAYROLL' F12.2)	94955
04524	1320*	935 FORMAT (' CALCULATED ',14,7X,14,2(8X,14),7X,14,8X,14,2(7X,14))	94960
04525	1321*	936 FORMAT (' READ JOBS OUT OF SEQUENCE LAST IN ON DAY ',13,' CURREN	94965
04525	1322*	1T JOB IS DATED 13)	94966
04526	1323*	937 FORMAT (10EQUIPMENT TYPE,13,' NOT IN INVENTORY')	94970
04527	1324*	950 FORMAT (1HOA6,4012)	95000
04530	1325*	951 FORMAT (1HO,2A6,15+13,4(2X,091,1X,214,F4.1,14))	95100
04531	1326*	952 FORMAT (78HO JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMEN	95200
04531	1327*	1T INDEX AND TYPE=NUMBER1	95300
04532	1328*	953 FORMAT (17,16,F7.1,1X,414,F7.2,15,1H=13,3X,6(2X,2131)	95400
04533	1329*	954 FORMAT (11HOA6,14,15,214,2X,1915)	95500
04534	1330*	955 FORMAT (27X,20F5.1)	95600
04535	1331*	956 FORMAT (1H,42X,16WEATHER CALENDAR)	95700
04536	1332*	957 FORMAT (1HO,7X,31131)	95800
04537	1333*	958 FORMAT (1H ,A6+1X,3113)	95900
04540	1334*	959 FORMAT ('WEATHER DAY DUPLICATE',314)	96000
04541	1335*	960 FORMAT (1HO40X,19HTRAVEL TIME TO ZONE)	96100
04542	1336*	961 FORMAT (1H 13,F7.2)	96200
04543	1337*	962 FORMAT (9X,20F6.2)	96300
04544	1338*	963 FORMAT (' PERSONNEL INVENTORY NUMBER AVAILABLE AND HOURS RATE')	96400
04545	1339*	964 FORMAT (3X,13,15,13,2F7.2)	96500
04546	1340*	965 FORMAT (34H LAST THREE DAYS OF PRECEDING YEAR 58X,3131)	96600
04547	1341*	966 FORMAT (1H 14,15,12,F7.2,1214)	96700
04550	1342*	967 FORMAT (1HOA6,1515)	96800
04551	1343*	968 FORMAT (30HMAXIMUM JOB INVENTORY EXCEEDED)	96900


```

04651 1402* J1=0 101600
04652 1403* DO 1002 K=K5,K6 101700
04655 1404* J1=J1+1 101750
04656 1405* XJUNK(J1)=8.0*HCOST(K)/(TOJ(J2)*PROD(K)) 101800
04657 1406* 1002 JUNK1(J1)=K 101900
04661 1407* DO 1003 K5=1,J1 102200
04664 1408* DO 1003 K6=K5,J1 102300
04664 1409* C RANK CREWS ON UNIT COST 102400
04667 1410* IF (XJUNK(K5),LE,XJUNK(K6)) GO TO 1003 102500
04671 1411* K3=JUNK1(K5) 102600
04672 1412* X=XJUNK(K5) 102700
04673 1413* JUNK1(K5)=JUNK1(K6) 102800
04674 1414* XJUNK(K5)=XJUNK(K6) 102900
04675 1415* JUNK1(K6)=K3 103000
04676 1416* XJUNK(K6)=X 103100
04677 1417* 1003 CONTINUE 103200
04702 1418* IF (J1.GT.6) J1=6 103300
04704 1419* DO 1004 K=1,J1 103400
04707 1420* 1004 ICREW(J2,K)=JUNK1(K) 103500
04711 1421* 1015 CONTINUE 103505
04713 1422* J8=IDAY 103510
04714 1423* DO 1114 K=1,IX5 103530
04717 1424* 1114 WUP(2,K)=0.0 103540
04721 1425* 2050 ISIG=0 103545
04722 1426* DO 1116 K=1,IX10 103560
04725 1427* K1=JRANK(K) 103565
04726 1428* J=INDX(K1) 103570
04727 1429* N=IVTYP(K1) 103572
04730 1430* IF (N,EQ,1000,OR,N,EQ,2000,OR,N,EQ,3000) JIND(K1)=9 103575
04732 1431* NX=4 103577
04733 1432* IF (IDAY,EQ,1) NX=MULT 103578
04735 1433* IF (IDTE(K1)+GT, IDAY+NX) JIND(K1)=9 103580
04737 1434* 1116 CONTINUE 103590
04741 1435* DO 1020 I=1,IX10 103600
04744 1436* J=JRANK(I) 103700
04745 1437* IF (JIND(J),EQ,9) GO TO 1020 103800
04747 1438* WPR(J)=VPR(J) 103900
04750 1439* IVMT(J)=0 104000
04751 1440* IF (IVDL(J),LE,J8+NX+2) GO TO 1005 104100
04753 1441* IF (IVTYP(J),EQ,2) GO TO 1020 104150
04755 1442* IVMT(J)=1 104200
04756 1443* WPR(J)=VPR(J)*MULT/(IVDL(J)=J8+1,0) 104300
04757 1444* 1005 DO 1018 K=1,6 104400
04757 1445* C OVER SIX BEST CREWS 104500
04762 1446* L=ICREW(J,K) 104600
04763 1447* IF (L,EQ,0) GO TO 1020 104700
04765 1448* L1=WPR(J)/(PROD(L)*TOJ(J)) 104800
04766 1449* IF (L1,EQ,0) L1=1 104900
04766 1450* C CREW DAY ESTIMATE 105000
04770 1451* 1006 IF (L1=ILAB(L),LE,NDL) GO TO 1008 105100
04772 1452* L1=NDL/ILAB(L) 105200
04773 1453* 1007 IF (L1,EQ,0) GO TO 1018 105300
04775 1454* GO TO 1006 105400
04776 1455* 1008 K1=IE01(L)*L1 105500
04777 1456* K2=IE02(L)*L1 105600
05000 1457* K3=IE03(L)*L1 105700
05001 1458* L2=IEQS(L) 105800
05002 1459* L3=IEQN(L) 105900

```

05003	1460*	IF (K1.LE.NDE1) GO TO 1009	106000
05005	1461*	K2=K2-NDE1+K1	106100
05006	1462*	K1=NDE1	106200
05007	1463*	1009 IF (K2.LE.NDE2) GO TO 1010	106300
05011	1464*	K3=K3-NDE2+K2	106400
05012	1465*	K2=NDE2	106500
05013	1466*	1010 IF (K3.LE.NDE3) GO TO 1011	106600
05015	1467*	L1=L1-L	106700
05016	1468*	GO TO 1007	106800
05017	1469*	1011 DO 1012 L4=L2,L3	106900
05022	1470*	L6=L4	107000
05023	1471*	L5=IEQ(L4)	107100
05024	1472*	IF (NDEQT(L5),LT,L1*INO(L4)) GO TO 1026	107200
05026	1473*	1012 CONTINUE	107300
05030	1474*	ISIG=1	107305
05031	1475*	Y=L1*TOJ(J)	107310
05032	1476*	X=Y*PROD(L)	107400
05033	1477*	M=2	107500
05034	1478*	WPR(J)=WPR(J)=X	107600
05035	1479*	IF (IVMT(J),NE,0) GO TO 1014	107700
05037	1480*	IF (WPR(J),GT,0,0) GO TO 1014	107800
05041	1481*	JIND(J)=9	107810
05042	1482*	1014 NDL=NDL-L1*ILAB(L)	107900
05043	1483*	NDE1=NDE1-K1	108000
05044	1484*	NDE2=NDE2-K2	108100
05045	1485*	NDE3=NDE3-K3	108200
05046	1486*	N=INDX(J)	108250
05047	1487*	SLH(M,N)=SLH(M,N)+Y*ILAB(L)	108300
05050	1488*	SE1H(M,N)=SE1H(M,N)+Y*IE01(L)	108550
05051	1489*	SE2H(M,N)=SE2H(M,N)+Y*IE02(L)	108600
05052	1490*	SE3H(M,N)=SE3H(M,N)+Y*IE03(L)	108700
05053	1491*	WUP(M,N)=WUP(M,N)+X	108710
05054	1492*	IF (WUP(M,N),GT,XJUNK1(N)) WUP(M,N)=XJUNK1(N)	108720
05056	1493*	TCL(M,N)=TCL(M,N)+Y*(ILAB(L)*CL+K1*CE1+K2*CE2+K3*CE3)	108800
05057	1494*	DO 1016 L4=L2,L3	108900
05062	1495*	IF JIND(L4),EQ,0) GO TO 1016	109000
05064	1496*	LS=IEQ(L4)	109100
05065	1497*	NDEQT(L5)=NDEQT(L5)-L1*INO(L4)	109200
05066	1498*	EQH(M,N,L5)=EQH(M,N,L5)+INO(L4)*Y	109300
05067	1499*	EQTOT(M,N)=EQTOT(M,N)+INO(L4)*Y*EQC(L5)	109400
05070	1500*	1016 CONTINUE	109500
05072	1501*	IF (WPR(LJ),GT,0,0) GO TO 1018	109600
05074	1502*	GO TO 1020	109700
05075	1503*	1026 L1=NDEQT(L5)/INO(L6)	109800
05076	1504*	GO TO 1007	109900
05077	1505*	1018 CONTINUE	110000
05101	1506*	1020 CONTINUE	110100
05103	1507*	IF (ISIG,EQ,1) GO TO 2050	110200
05105	1508*	XJL(M)=NDL*8	110300
05106	1509*	XJE1(M)=NDE1*8	110400
05107	1510*	XJE2(M)=NDE2*8	110500
05110	1511*	XJE3(M)=NDE3*8	110600
05111	1512*	DO 3091 I=1,IX10	110710
05114	1513*	DO 3091 J=1,6	110720
05117	1514*	3091 ICREW(I,J)=0	110730
05122	1515*	IF (LIOUT(L6),EQ,0) GO TO 772	110740
05124	1516*	PRINT 986, I WEEK, NMULT	110750
05130	1517*	GO TO 773	110800

PAGE: 31

05131 1518* END

98300

END OF UNIVAC 1108 FORTRAN V COMPILATION. 1 «DIAGNOSTIC» MESSAGE(S)
PHASE 1 TIME = 3 SEC.
PHASE 2 TIME = 0 SEC.
PHASE 3 TIME = 6 SEC.
PHASE 4 TIME = 1 SEC.
PHASE 5 TIME = 4 SEC.
PHASE 6 TIME = 3 SEC.

TOTAL COMPILATION TIME = 17 SEC

@IT FOR HZONE, HZONE
 UNIVAC 1108 FORTRAN V LEVEL 2206 NNL6 F5016A
 THIS COMPIRATION WAS DONE ON 12 FEB 69 AT 15:07:50

SUBROUTINE HZONE ENTRY POINT 000305

STORAGE USED (BLOCK, NAME, LENGTH)

0001	*CODE	000314
0000	*DATA	000055
0002	*BLANK	004346
0006	NE.RR3\$	

EXTERNAL REFERENCES (BLOCK, NAME)

0003	NPRTS
0004	N101\$
0005	N102\$
0006	NE.RR3\$

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000052	1346	0001	000022	150L	0001	000033	151L	0001	000050	152L	0001	000104	153L	
0001	000122	154L	0001	000142	162L	0001	000126	164G	0001	000163	170L	0001	000165	171L	
0001	000147	177G	0001	000246	190L	0001	000174	214G	0001	000210	223G	0001	000263	899L	
0000	000023	900F	0000	000027	910F	0000	000012	927F	0002	R 002542	CPR	0002	R 001215	DLZ	
0000	R 000000	ERR	0002	1	000000	1	0002	1	003444	1DT	0002	1	000673	IHYN	
0002	1	000630	IHYS	0002	1	000736	IHZ	0002	1	001640	IVLC	0002	1	002066	IVSZ
0002	1	000701	I10	0002	1	000726	I16	0002	1	003216	JIND	0002	1	003672	JRANK
0002	1	000003	JUNK1	0000	1	000003	J1	0000	1	000001	K	0000	1	000007	N?
0000	1	000010	N3	0002	R	001474	TT	0002	R	002314	TTJ	0002	R	002770	VPR
0000	R	000005	Y	0000	R	000011	Z	0000	R	000004	X	0000	R	000004	X

```

00101 1*      SUBROUTINE HZONEF
00101 2*      COMMON STATEMENTS*****
00103 3*      COMMON L1X10,I1X6,JUNK1(370)
00103 4*      COMMON L1X6*I1X6*HIGHWAYS DEFINED BY ZONES
00104 5*      COMMON IHY(35),IHY5(35),IHYN(35)
00104 6*      COMMON L1X6Z* ZONES IN LISTED HIGHWAYS
00105 7*      COMMON 1HZ(175),DLZ(175)
00105 8*      COMMON L1X8* ZONES IN AREA
00106 9*      COMMON TT(100)
00106 10*     COMMON L1X10* JOBS IN INVENTORY
00107 11*     COMMON IVLC(150),IVSZ(150),TTJ(150),CPR(150),JIND(150),I
00107 12*     I0TE(150),JRANK(150),IVNZ(150)
00107 13*     C CHECK IF THE JOB IS ZONE OR HIGHWAY ORIENTED
00110 14*     IF(CPR(1)*LE.0.0) RETURN
00112 15*     IF(IVLC(1)*NE.0) GO TO 151
00112 16*     C. THE JOB IS ZONE ORIENTED
00114 17*     IF(IVSZ(1)*NE.0) GO TO 150
00114 18*     C. ERROR=NO ZONE GIVEN FOR ZONE ORIENTED JOB

```

```

SH200000
99
100
110
111
120
121
130
131
140
141
142
SH200510
SH200600
SH200700
SH200800
SH200900

```

```

00116 19*      ERR=3HSZ1
00117 20*      GO TO 899
00120 21*      150 IVNZ(I)=IVSZ(I)
00121 22*      K=IVSZ(I)
00121 23*      C SET TRAVEL TIME TO ZONE
00122 24*      TTJ(I)=TT(K)
00123 25*      RETURN
00123 26*      C CHECK TO SEE IF JOB IS FOR A PARTICULAR HIGHWAY
00124 27*      151 IF(IVLC(I),LE,990) GO TO 152
00124 28*      C JOB APPLIES TO MANY ZONES AND NO PARTICULAR HIGHWAY
00126 29*      TTJ(I)=0.0
00127 30*      IVSZ(I)=42
00130 31*      IVNZ(I)=42
00131 32*      IVLC(I)=0
00132 33*      RETURN
00133 34*      152 DO 200 J=1,TX6
00136 35*      J1=J
00137 36*      IF(IVLC(I),EQ,1HY(J)) GO TO 153
00141 37*      200 CONTINUE
00143 38*      PRINT 910,IVLC(I),IVSZ(I),IVNZ(I),X,Y
00143 39*      C ERROR--JOB LOCATION IS NOT ON HIGHWAY LIST
00152 40*      ERR=3HSZ4
00153 41*      GO TO 899
00154 42*      153 N1=1HY(S(J1))
00155 43*      N2=1HY(N(J1))
00155 44*      C JOB IS FOR A HIGHWAY OR PORTION OF A HIGHWAY
00156 45*      IF(IVSZ(I),EQ,0) GO TO 171
00160 46*      IF(IVNZ(I),NE,0) GO TO 154
00162 47*      IVNZ(I)=1HZ(N2)
00163 48*      154 DO 160 J=N1,N2
00166 49*      N3=J
00167 50*      IF(IVSZ(I),EQ,1HZ(J)) GO TO 162
00171 51*      160 CONTINUE
00171 52*      C ERROR--STARTING ZONE OF JOB IS NOT ON ZONE LIST
00173 53*      ERR=3HSZ5
00174 54*      GO TO 899
00175 55*      162 N1=N3
00176 56*      DO 165 J=N1,N2
00201 57*      N3=I
00202 58*      IF(IVNZ(I),EQ,1HZ(J)) GO TO 170
00204 59*      927 FORMAT (*DJOB TYPE IS UNDEFINED-- JOB IS BEING IGNORED*)
00205 60*      165 CONTINUE
00205 61*      C ERROR--ENDING ZONE OF JOB IS NOT ON ZONE LIST
00207 62*      ERR=3HSZ3
00210 63*      GO TO 899
00211 64*      170 N2=N3
00212 65*      171 X=0.0
00213 66*      DO 180 J=N1,N2
00213 67*      C FIND ZONE IN WHICH JOB WAS LAST ENDED
00216 68*      180 X=X+DLZ(J)
00220 69*      Y=CPR(I)/(VPR(I)+CPR(I))
00221 70*      Z=0.0
00222 71*      DO 185 J=N1,N2
00225 72*      N3=J
00226 73*      Z=Z+DLZ(J)
00227 74*      IF(Z/X1,GT,Y) GO TO 190
00231 75*      185 CONTINUE
00233 76*      PRINT 910,IVLC(I),IVSZ(I),IVNZ(I),X,Y

```

00233	77*	C ERROR--MILES OF JOB COMPLETED IS GREATER THAN LENGTH OF HIGHWAY	SH206900
00242	78*	ERR=3HSZ6	SH207100
00243	79*	GO TO 899	SH207200
00244	80*	190 IVSZ(I)=IHZ(N3)	SH207300
00245	81*	N3=IVSZ(I)	SH207325
00246	82*	TTJ(I)=TI(N3)	SH207350
00247	83*	IVNZ(I)=IHZ(N2)	SH207375
00250	84*	RETURN	SH207400
00251	85*	899 PRINT 900, ERR	SH207500
00254	86*	TTJ(I)=1000.0	SH207600
00255	87*	RETURN	SH207650
00256	88*	900 FORMAT(12X,'ERROR AT ',A3)	SH207700
00257	89*	910 FORMAT(10X,3I5,2F9.1)	
00260	90*	END	SH207800

END OF UNIVAC 1108 FORTRAN V COMPILATION. 0 *DIAGNOSTIC* MESSAGE(S)

PHASE 1 TIME = 1 SEC.
 PHASE 2 TIME = 0 SEC.
 PHASE 3 TIME = 0 SEC.
 PHASE 4 TIME = 0 SEC.
 PHASE 5 TIME = 0 SEC.
 PHASE 6 TIME = 1 SEC.

TOTAL COMPILATION TIME = 2 SEC

©IT FOR RANK,RANK
 UNIVAC 1108 FORTRAN V LEVEL 2206 0016 F50168
 THIS COMPIRATION WAS DONE ON 12 FEB 69 AT 15107153

SUBROUTINE RANK ENTRY POINT 000106

STORAGE USED (BLOCK, NAME, LENGTH)

0001	*CODE	000122
0000	*DATA	000030
0002	*BLANK	003437

EXTERNAL REFERENCES (BLOCK, NAME)

0003	NERR3\$
------	---------

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

00001	000005	1076	0001	000013	1126	0001	000063	134L	0001	000056	174L	0002	R 001633
0002	I 00000	1	0002	I 002535	IDTE	0002	I 00073	IVLC	0002	I 003211	IVNZ	0002	I 001157
0002	I 000001	IX10	0002	I 000002	IX6	0000	I 000003	J2	0000	I 000000	J	0002	I 002307
0002	I 002763	JRANK	0002	I 000003	JUNK1	0000	I 000001	J1	0000	I 000002	J2	0002	R 000565
0002	R 001405	TTJ	0002	R 002061	VPR							TT	

00101	1*	ROUTINE RANK	99
00101	2*	COMMON STATEMENT	100
00103	3*	COMMON 1,IX10,IX6,JUNK1(370)	130
00103	4*	COMMON IX8.. ZONES IN AREA	
00104	5*	COMMON TT(100)	131
00104	6*	COMMON IX10.. JOBS IN INVENTORY	140
00105	7*	COMMON IVLC(150),IVSZ(150),TTJ(150),CPR(150),VPR(150),JIND(150),I	141
00105	8*	IDTE(150),JRANK(150),IVNZ(150)	142
00106	9*	00 135 1=1,IX10	59100
00111	10*	00 134 J=1,IX10	59200
00114	11*	J1=JRANK(1)	59250
00115	12*	J2=JRANK(1)	59275
00116	13*	IF(JIND(J2)=EQ.9) GO TO 134	59300
00120	14*	IF(JUNK1(J2)=JUNK1(J1)) J1=J2+134	59400
00123	15*	IF (IDTE(J2)=GT.IDTE(J1),AND.JIND(J1).NE.9) GO TO 134	59500
00125	16*	J2=JRANK(J1)	59900
00126	17*	JRANK(J)=JRANK(1)	60000
00127	18*	JRANK(J)=J2	60100
00130	19*	134	60200
00132	20*	135 CONTINUE	60300
00134	21*	RETURN	
00135	22*	END	

END OF UNIVAC 1108 FORTRAN V COMPIRATION. 0.0 DIAGNOSTIC MESSAGE(S)

PHASE 1 TIME = 0 SEC.
 PHASE 2 TIME = 0 SEC.

PAGE: 36

PHASE 3 TIME = 0 SEC.
PHASE 4 TIME = 0 SEC.
PHASE 5 TIME = 0 SEC.
PHASE 6 TIME = 0 SEC.

TOTAL COMPILED TIME = 0 SEC

Q XQT HIWAY

BLANK COMMON	157432	163777
STARTING ADDRESS	014000	
CORE LIMITS	014000 034410	100000 125635
		157424 157431

HIWAY /CODE

0	100000-124253
1	014000-027303

NSTOPS /CODE

1	027304-027315
---	---------------

NOUTS /CODE

0	124254-124260
1	022316-030363
2	124261-124321

NTABS /CODE

0	124322-124527
---	---------------

NFTVS /CODE

1	030364-030406
---	---------------

NIOINS /CODE

1	030407-030453
2	124530-124560

NOTINS /CODE

1	030454-030746
2	124561-124623

NFMTS /CODE

1	030747-031754
2	124624-124744

NIERS /CODE

0	124745-124745
1	031755-032122
2	124746-125031

NERRS /CODE

PAGE: 38

0 125032-125150
1 032123-032462

NINPTS/CODE

0 125151-125151
1 032463-033616
2 125152-125204

FLOATX

0 125205-125320

NEXPSSX

0 125321-125405

CONVTEX

0 125406-125460

NININS/CODE

1 033617-033752
2 125461-125530

RANK /CODE

0 125531-125560
1 033753-034074

HZONE /CODE

0 125561-125635
1 034075-034410

END OF ALLOCATION 1103 0033

MAXIMA	1X4=	25	1X5=	30	1X5C=	110	1X5E=	250	1X6=	35	1X6Z=	175	1X8=	100	1X9=	AN	1X10=	150
HOLIDAYS	1	53	150	185	215	310	324	359										
INPUT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
OUT	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	

PERSONNEL INVENTORY NUMBER AVAILABLE AND HOURLY RATE

EQUPMT	FOREMEN	7	3.45		
	EQ OP 1	23	2.50		
	EQ OP -2	4	2.85		
	EQ OP 3	1	3.25		
	LABORERS	58	2.00		
	TOWED DISTRB	1	1	1.20	
	DUMP TRUCK	2	2	2.40	
	ROLLER	3	3	3.90	
	ASPHALT PVER	4	4	10.40	
	MOTOR GRADER	5	4	7.80	
	TOWED BROOM	6	6	1.00	
	FARM TRACTOR	7	7	1.25	
	AIR COMPRESS	8	8	2.50	
	PICKUP TRUCK	9	9	1.00	
	TRK+PNT STRP	10	10	7.20	
	FLT-BED TRCK	11	11	2	1.20
	FRNT-END LDR	12	12	5	4.70
	GRADALL	13	13	1	13.00
	TOWD ASPH KT	14	14	4	4.60
	POWER SPR RG	15	15	1	.75
	SCREENSDE TK	16	16	2	1.30
	MOBILE SWEEP	17	17	1	7.20
	SIKLE-BAR M	18	18	6	1.00
	ROTARY MOWER	19	19	3	1.00

JOB TYPES AND BASIC CREW DATA

EMERGENCY 1000 1 11111111 11111111 11111111 11111111 1 370 .0 1

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
1 1 1.0 1 0 0 2 8.90 1- 1 2 1

TRAFFIC SERV 2 2 11111111 11111111 11111111 11111111 1 370 .0 2

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
2 2 1.0 1 0 0 2 8.90 2- 2 2 1

LIGHT SNOW 2000 3 000000000 000000000 000000000 000000000 1 370 .0 3

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
3 3 .1 1 0 0 1 6.90 3- 3 2 1
3 4 .0 0 0 0 1 2.00 4- 4 2 0
3 5 .0 1 0 0 0 2.50 5- 5 2 0

SNOW PLOW 3000 4 000000000 000000000 000000000 000000000 1 370 .0 6

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
4 6 .1 1 0 0 1 6.90 6- 6 2 1
4 7 .0 1 0 0 0 4.90 7- 7 2 1
4 8 .0 0 0 1 0 3.25 8- 8 2 0
4 9 .0 0 0 0 1 2.00 9- 9 2 0

SNOW CLEAN 3500 5 000000000 000000000 000000000 000000000 1 370 .0 10

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
5 10 .1 1 0 0 0 4.90 10- 10 2 1
5 11 .0 1 0 0 0 10.30 11- 11 5 1
5 12 .0 0 0 0 11 22.00 12- 12 2 0
5 13 .0 0 0 0 1 2.00 13- 13 2 0

3 6 000110110 100110110 100111111 110111111 0 346 .5 14

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
6 14 .9 2 1 0 3 30.35 14- 16 5 1 2 2 3 1
6 15 1.3 2 2 0 4 45.40 17- 19 5 2 2 3 3 1
6 16 2.3 4 2 0 4 52.65 20- 24 5 2 2 3 6 1 7 1 3 1

4 7 100100100 11111111 11111111 11111111 289 320 1.0 17

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
7 17 540.0 3 0 0 4 22.70 25- 25 2 3
7 18 585.0 3 0 0 5 24.70 26- 26 2 3
7 19 625.0 4 0 0 6 31.60 27- 27 2 4
7 20 415.0 2 0 0 3 15.80 28- 28 2 2

5 8 100100100 11111111 11111111 11111111 75 106 .5 21

JOB CREW PROD E01 E02 E03 LAB HR COST EQUIPMENT INDEX AND TYPE-NUMBER
8 21 1300.0 2 0 0 4 12.80 29- 29 2 2
8 22 1690.0 3 0 0 5 24.70 30- 30 2 3
8 23 2050.0 4 0 0 6 31.60 31- 31 2 4
8 24 1150.0 2 0 0 3 15.80 32- 32 2 2

6 9 000100100 100111111 100111111 110111111 75 289 1.0 25

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER					
9	25	4.0	4	1	0	3	29.65	33- 35	10	1	11	1	2	1

8 10 000100100 100100100 110110110 111101110 0 366 .5 26

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER				
10	26	.6	2	0	1	5	36.05	36- 37	13	1	2	2	
10	27	.9	2	0	1	6	40.45	38- 39	13	1	2	3	

9 11 000100100 100110110 100111111 110111111 336 60 1.5 28

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER					
11	28	.2	1	0	0	1	6.90	40- 40	2	1				
11	29	.3	1	0	0	4	12.90	41- 41	2	1				
11	30	595.0	2	0	0	9	33.30	42- 44	2	3	14	1	8	1
11	31	637.0	2	0	0	9	33.30	45- 47	2	3	14	1	8	1

10 12 000100000 100100100 100110110 110110110 153 305 .5 32

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER					
12	32	2.3	0	0	0	3	12.75	48- 50	7	3	18	2	19	1
12	33	3.2	1	0	0	4	19.50	51- 53	7	4	18	2	19	2
12	34	.9	0	0	0	1	4.25	54- 55	7	1	18	1		
12	35	2.0	0	0	0	2	8.50	56- 58	7	2	18	1	19	1
12	36	2.6	0	0	0	4	17.00	59- 61	7	4	18	3	19	1
12	37	1.4	1	0	0	2	11.00	62- 63	7	2	18	2		

101 13 000100100 100110110 110111111 111111111 0 366 1.5 38

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER					
13	38	2.7	2	0	0	4	22.30	64- 66	14	1	2	2	3	1
13	39	3.3	2	0	0	5	26.70	67- 69	14	1	2	3	3	1
13	40	5.4	3	0	0	5	29.80	70- 72	1	1	2	3	3	1
13	41	6.0	4	0	0	6	36.70	73- 75	1	1	2	4	3	1

102 14 000100100 100111111 110111111 111111111 0 366 2.0 42

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER					
14	42	1.0	1	0	0	2	9.50	76- 77	14	1	2	1		
14	43	2.0	2	0	0	4	22.30	78- 80	14	1	2	2	3	1
14	44	4.0	3	0	0	7	33.20	81- 83	14	1	2	3	3	1
14	45	5.0	4	0	0	7	38.10	84- 86	14	1	2	4	3	1
14	46	10.0	4	1	0	8	53.75	87- 90	1	1	2	5	3	1

103 15 100110110 100111111 110111111 111111111 0 366 .5 47

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER			
15	47	7.0	2	0	0	2	13.80	91- 91	2	2		
15	48	14.0	3	1	0	2	29.35	92- 93	2	3	5	1
15	49	3.5	1	0	0	1	6.90	94- 94	2	1		

104 16 000100100 100111111 100111111 110111111 0 366 1.0 50

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX AND TYPE-NUMBER			
16	50	1.5	0	1	0	0	10.65	95- 95	5	1		
16	51	2.8	0	2	0	0	21.30	96- 96	5	2		

105 17 100100100 100100100 100110110 110110110 0 366 .0 52

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
17	52	143.0	1	0	0	1	6.90	97- 97	2	1
17	53	200.0	1	0	0	3	10.90	98- 98	2	1
17	54	430.0	1	0	0	5	14.90	99- 99	2	1
17	55	571.0	1	0	0	8	23.30	100-100	2	2

106 18 100100100 100111111 110111111 111111111 0 366 .0 56

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
18	56	5.0	1	0	0	1	6.90	101-101	2	1
18	57	7.0	1	0	0	2	8.90	102-102	2	1
18	58	12.0	1	0	0	4	12.90	103-103	2	1

108 19 000110110 110111111 110111111 111111111 0 366 .5 59

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
19	59	46.0	1	0	0	1	5.80	104-104	16	1
19	60	62.0	1	0	0	2	7.80	105-105	16	1

120 000100100 100111111 100111111 110111111 153 245 .5 61

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
20	61	26.9	6	0	0	7	58.90	106-109	1	1
20	62	17.7	4	0	0	7	49.10	110-113	1	1

7 21 100100100 100100100 100110110 110110110 0 366 .5 63

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
21	63	67.0	3	1	0	3	33.85	114-116	5	1
21	64	100.0	4	2	0	4	51.40	117-119	5	2
21	65	67.0	3	0	1	3	34.55	120-121	13	1
21	66	100.0	4	1	1	4	52.10	122-124	13	1

107 22 000100100 100111111 100111111 110111111 92 305 1.0 67

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
22	67	117.0	1	0	0	2	8.45	125-126	11	1
22	68	83.0	1	0	0	2	8.90	127-127	2	1

109 23 100100100 110100100 100111111 110111111 0 366 .0 69

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
23	69	4.0	1	0	0	2	8.90	128-128	2	1
23	70	6.5	1	0	0	4	12.90	129-129	2	1
23	71	9.0	1	0	0	6	19.30	130-130	2	2
23	72	3.0	1	0	0	1	6.90	131-131	2	1

110 24 100100100 100110110 110111111 111111111 0 366 1.0 73

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
24	73	2.0	1	0	0	0	9.70	132-132	17	1

111 25 100110110 111111111 111111111 111111111 0 366 .5 74

JOB	CREW	PROD	E01	E02	E03	LAB	HR	COST	EQUIPMENT INDEX	AND TYPE-NUMBER
-----	------	------	-----	-----	-----	-----	----	------	-----------------	-----------------

PAGE: 43

25	74	5.0	1	0	0	1	5.80	133-133	16	1
25	75	7.0	1	0	0	2	7.80	134-134	16	1

HIGHWAYS AND CORRESPONDING ZONES

PAGE: 45

ZONE	19	210	92	98	37	45	54	63	71	80	79
					1.7	2.0	2.0	1.9	2.1	3.3	4.5
ZONE	20	223	99	105	40	49	48	56	55	64	71
					2.1	1.9	2.1	2.3	1.0	2.2	1.2
ZONE	21	373	106	111	79	80	81	82	73	74	
					1.6	2.1	2.1	2.4	1.7	1.3	
ZONE	22	214	112	118	14	15	15	17	16	19	20
					1.3	1.9	2.0	1.9	1.9	2.1	2.6
ZONE	23	556	119	123	3	10	17	18	25		
					2.1	2.2	1.0	1.3	2		
ZONE	24	459	124	124	7						
					2.4						
ZONE	25	637	125	125	28						
					1.6						
ZONE	26	631	126	126	78						
					1.4						
ZONE	27	973	127	127	7						
					2						
ZONE	28	704	128	132	3	2	1	8	14		
					1.5	2.2	1.5	2.2	1.4		

TRAVEL TIME TO ZONE

RECURRING JOB PROTOTYPES

1	2	0	16.00	991	0	0	1	1	1	1	1	0
2	8	2	.10	495	0	0	4	7	366	0	11	30
3	8	2	.10	495	0	0	4	7	366	0	2	30
4	8	2	.10	495	0	0	4	7	366	0	4	30
5	8	2	.10	495	0	0	4	7	366	0	91	30
6	8	2	.10	295	0	0	4	7	366	0	222	30
7	108	3	100.00	993	0	0	10	30	366	0	2	40
8	111	3	.30	301	26	0	0	1	5	0	4	20
9	102	3	5.00	556	10	0	2	7	7	0	30	20
10	111	3	.10	223	40	0	0	1	5	0	4	20
11	111	3	.10	373	79	0	0	1	5	0	4	20
12	111	3	.20	50	7	0	0	1	5	0	4	20
13	102	3	1.00	459	7	0	2	7	7	0	30	20
14	102	3	1.00	459	7	0	2	7	7	0	30	20
15	102	3	1.00	301	83	0	2	7	7	0	30	20
16	101	3	.70	495	38	0	2	1	60	0	30	20
17	111	3	.10	214	14	0	0	1	5	0	4	20
18	102	3	2.00	202	33	0	2	7	7	0	30	20
19	101	3	.30	210	45	0	2	1	60	0	30	0
20	111	3	.10	382	50	0	0	1	5	0	4	20
21	111	3	.10	704	3	0	0	1	5	0	4	20
22	102	3	3.00	3	6	0	2	7	7	0	30	20
23	102	3	4.00	50	4	0	2	7	7	0	30	20
24	104	3	3.10	382	0	0	2	3	10	0	180	40
25	111	3	.20	4	21	0	0	1	5	0	4	20
26	111	3	.10	459	7	0	0	1	5	0	4	20
27	111	3	.10	381	74	0	0	1	5	0	4	20
28	101	3	1.40	5	39	0	2	1	60	0	30	0
29	111	3	.10	458	21	0	0	1	5	0	4	20
30	111	3	.10	337	30	0	0	1	5	0	4	20
31	111	3	.10	408	41	0	0	1	5	0	4	20
32	102	3	2.00	5	48	0	2	7	7	0	30	20
33	111	3	.10	414	37	0	0	1	5	0	4	20
34	102	3	1.00	414	37	0	2	7	7	0	30	20
35	101	3	.70	704	8	0	2	1	60	0	30	20
36	101	3	.70	337	30	0	2	1	60	0	30	20
37	101	3	.30	373	73	0	2	1	60	0	30	20
38	10	2	26.00	301	0	0	8	30	30	153	40	30
39	10	2	15.90	202	0	0	8	30	30	153	40	30
40	10	2	2.90	3	0	0	8	30	30	153	40	30

MAXIMA	1X4#	25	1X5#	30	1X5C#	110	1X5E#	250	1X6#	35	1X6Z#	175	1X8#	100	1X9#	94	1X10#
CALCULATED	19		25	42	10	30	367	1	134	28	132	19				40	
1	108	3	700.00	0	42	10	30	367	1	19							
2	4	2	580.00	373	79	74	2	7	181	1	7						
3	4	2	480.00	214	14	20	2	7	181	1	7						
4	4	2	230.00	556	3	25	2	7	181	1	7						
5	4	2	110.00	459	7	7	2	7	181	1	7						
6	4	2	260.00	704	3	14	2	7	181	1	7						
7	5	2	700.00	301	3	83	2	7	367	1	8						
8	5	2	420.00	202	7	34	2	7	367	1	8						
9	5	2	80.00	3	6	6	2	7	367	1	8						
10	5	2	450.00	50	7	367	1	8									
11	5	2	410.00	5	28	74	2	7	367	1	8						
12	5	2	440.00	4	21	43	2	7	367	1	8						
13	5	2	100.00	210	37	79	2	7	367	1	8						
14	5	2	400.00	495	34	1	2	7	367	1	8						
15	5	2	30.00	295	36	36	2	7	367	1	8						
16	5	2	480.00	381	74	93	2	7	367	1	8						
17	5	2	500.00	382	50	82	2	7	367	1	8						
18	5	2	80.00	458	21	28	2	7	367	1	8						
19	5	2	240.00	408	41	43	2	7	367	1	8						
20	5	2	130.00	884	21	30	2	7	367	1	8						
21	5	2	110.00	337	30	39	2	7	367	1	8						
22	5	2	170.00	414	37	28	2	7	367	1	8						
23	5	2	440.00	223	40	71	2	7	367	1	8						
24	5	2	560.00	373	79	74	2	7	367	1	8						
25	5	2	460.00	214	14	20	2	7	367	1	8						
26	5	2	230.00	556	3	25	2	7	367	1	8						
27	5	2	110.00	459	7	7	2	7	367	1	8						
28	5	2	260.00	704	3	14	2	7	367	1	8						
29	6	2	24.00	0	42	42	8	30	367	1	9						
30	6	2	13.00	0	42	42	8	30	367	1	9						
31	110	3	140	495	34	1	4	5	31	1	24						
32	1000	1	300	0	71	71	2	8	18	10	1						
33	2	0	16.00	0	42	42	1	1	3	2	2						
34	2	0	16.00	0	42	42	1	1	4	3	2						
35	2	0	16.00	0	42	42	1	1	5	4	2						
36	2	0	16.00	0	42	42	1	1	6	7	2						
37	2	0	16.00	0	42	42	1	1	9	6	2						
38	8	2	10	495	34	1	4	7	366	0	10						
39	8	2	10	495	34	1	4	7	366	0	10						
40	8	2	10	495	34	1	4	7	366	0	10						
41	8	2	10	495	34	1	4	7	368	2	10						
42	8	2	10	495	34	1	4	7	370	4	10						
43	8	2	10	495	34	1	4	7	374	8	10						
44	8	2	10	495	34	1	4	7	366	0	10						
45	8	2	10	495	34	1	4	7	370	4	10						
46	8	2	10	495	34	1	4	7	374	8	10						
47	8	2	10	495	34	1	4	7	366	0	10						
48	8	2	10	295	36	4	7	366	0	10							
49	108	3	100.00	0	42	42	10	30	366	0	10						
50	108	3	100.00	0	42	42	10	30	368	2	10						
51	108	3	100.00	0	42	42	10	30	370	4	10						
52	108	3	100.00	0	42	42	10	30	372	6	10						
53	108	3	100.00	0	42	42	10	30	374	8	10						
54	111	3	430	301	26	7	0	1	5	0	25						
55	111	3	30	301	26	1	0	1	9	4	25						
56	111	3	30	301	26	2	0	1	13	8	25						

57	102	3	5.00	556	10	3	2	7	7	0	14
58	111	3	+10	223	40	4	0	1	5	0	25
59	111	3	+10	223	40	5	0	1	9	4	25
60	111	3	+10	223	40	6	0	1	13	8	25
61	111	3	+10	373	79	34	0	1	5	0	25
62	111	3	+10	373	79	37	0	1	9	4	25
63	111	3	+10	373	79	38	0	1	13	8	25
64	111	3	+20	50	7	39	0	1	5	0	25
65	111	3	+20	50	7	30	0	1	9	4	25
66	111	3	+20	50	7	23	0	1	13	8	25
67	102	3	1.00	459	7	16	2	7	7	0	14
68	102	3	1.00	459	7	9	2	7	7	0	14
69	102	3	1.00	301	83	2	2	7	7	0	14
70	101	3	+70	495	38	1	2	1	60	0	13
71	111	3	+10	214	14	36	0	1	5	0	25
72	111	3	+10	214	14	28	0	1	9	4	25
73	111	3	+10	214	14	39	0	1	13	8	25
74	102	3	2.00	202	33	47	2	7	7	0	14
75	101	3	+30	210	45	48	2	1	60	0	13
76	111	3	+10	382	50	57	0	1	5	0	25
77	111	3	+10	382	50	66	0	1	9	4	25
78	111	3	+10	382	50	74	0	1	13	8	25
79	111	3	+10	704	3	30	0	1	5	0	25
80	111	3	+10	704	3	39	0	1	9	4	25
81	111	3	+10	704	3	21	0	1	13	8	25
82	102	3	2.00	3	6	29	2	7	7	0	14
83	102	3	4.00	50	4	30	2	7	7	0	14
84	104	3	+10	382	50	82	2	3	10	0	16
85	111	3	+20	4	21	40	0	1	5	0	25
86	111	3	+20	4	21	41	0	1	9	4	25
87	111	3	+20	4	21	42	0	1	13	8	25
88	111	3	+10	459	7	43	0	1	5	0	25
89	111	3	+10	459	7	37	0	1	9	4	25
90	111	3	+10	459	7	38	0	1	13	8	25
91	111	3	+10	381	74	28	0	1	5	0	25
92	111	3	+10	381	74	37	0	1	9	4	25
93	111	3	+10	381	74	45	0	1	13	8	25
94	101	3	+1.40	5	39	54	2	1	60	0	13
95	111	3	+10	458	21	63	0	1	5	0	25
96	111	3	+10	458	21	71	0	1	9	4	25
97	111	3	+10	458	21	80	0	1	13	8	25
98	111	3	+10	337	30	79	0	1	5	0	25
99	111	3	+10	337	30	40	0	1	9	4	25
100	111	3	+10	337	30	49	0	1	13	8	25
101	111	3	+10	408	41	48	0	1	5	0	25
102	111	3	+10	408	41	56	0	1	9	4	25
103	111	3	+10	408	41	55	0	1	13	8	25
104	102	3	2.00	5	48	64	2	7	7	0	14
105	111	3	+10	414	37	71	0	1	5	0	25
106	111	3	+10	414	37	79	0	1	9	4	25
107	111	3	+10	414	37	80	0	1	13	8	25
108	102	3	+1.00	414	37	81	2	7	7	0	14
109	101	3	+70	704	8	82	2	1	60	0	13
110	101	3	+70	337	30	73	2	1	60	0	13
111	101	3	+30	373	73	74	2	1	60	0	13

WEEKLY PLAN WEEK 0 3 WORK DAYS

INDEX	TYPE	NAME	LABOR HOURS						LABOR COST	TOTAL COST	W.U. PLANNED	W.U. DONE	W.U. CARRIED
			LABORERS	EQ OP 1	EQ OP 2	EQ OP 3	TOTAL						
2	2	TRAFFIC SERV	48.0	24.0	0	0	72.0	156.00	213.60	7	0	0	0
7	4		90.9	60.6	0	0	151.5	333.30	478.74	5	0	0	0
8	5		601.9	300.9	0	0	902.8	1256.07	2678.31	4,0	0	0	0
9	6		42.0	56.0	14.0	0	112.0	263.90	415.10	2	0	0	0
10	8		132.0	44.0	0	22.0	198.0	455.77	900.17	1,7	0	0	0
14	102		10.5	5.3	0	0	15.8	36.08	51.88	5.3	0	0	0
19	106		60.0	30.0	0	0	90.0	202.87	241.87	6	0	0	0
24	110		4.0	6.8	0	0	6.8	17.08	64.28	7	0	0	0
25	111		28.8	14.4	0	0	43.2	98.64	117.36	100.8	0	0	0
TOTALS			1014	542	14	22	1592	3520	5163				
JOB X LABOR			216.0	0	0	0	216.0	432.00					

EQUIPMENT SUMMARY

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH reports National Bureau of Standards research and development in physics, mathematics, chemistry, and engineering. Comprehensive scientific papers give complete details of the work, including laboratory data, experimental procedures, and theoretical and mathematical analyses. Illustrated with photographs, drawings, and charts.

Published in three sections, available separately:

● Physics and Chemistry

Papers of interest primarily to scientists working in these fields. This section covers a broad range of physical and chemical research, with major emphasis on standards of physical measurement, fundamental constants, and properties of matter. Issued six times a year. Annual subscription: Domestic, \$6.00; foreign, \$7.25*.

● Mathematical Sciences

Studies and compilations designed mainly for the mathematician and theoretical physicist. Topics in mathematical statistics, theory of experiment design, numerical analysis, theoretical physics and chemistry, logical design and programming of computers and computer systems. Short numerical tables. Issued quarterly. Annual subscription: Domestic, \$2.25; foreign, \$2.75*.

● Engineering and Instrumentation

Reporting results of interest chiefly to the engineer and the applied scientist. This section includes many of the new developments in instrumentation resulting from the Bureau's work in physical measurement, data processing, and development of test methods. It will also cover some of the work in acoustics, applied mechanics, building research, and cryogenic engineering. Issued quarterly. Annual subscription: Domestic, \$2.75; foreign, \$3.50*.

TECHNICAL NEWS BULLETIN

The best single source of information concerning the Bureau's research, developmental, cooperative and publication activities, this monthly publication is designed for the industry-oriented individual whose daily work involves intimate contact with science and technology—for engineers, chemists, physicists, research managers, product-development managers, and company executives. Annual subscription: Domestic, \$3.00; foreign, \$4.00*.

*Difference in price is due to extra cost of foreign mailing.

Order NBS publications from:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

NONPERIODICALS

Applied Mathematics Series. Mathematical tables, manuals, and studies.

Building Science Series. Research results, test methods, and performance criteria of building materials, components, systems, and structures.

Handbooks. Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications. Proceedings of NBS conferences, bibliographies, annual reports, wall charts, pamphlets, etc.

Monographs. Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

National Standard Reference Data Series. NSRDS provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated.

Product Standards. Provide requirements for sizes, types, quality and methods for testing various industrial products. These standards are developed cooperatively with interested Government and industry groups and provide the basis for common understanding of product characteristics for both buyers and sellers. Their use is voluntary.

Technical Notes. This series consists of communications and reports (covering both other agency and NBS-sponsored work) of limited or transitory interest.

Federal Information Processing Standards Publications. This series is the official publication within the Federal Government for information on standards adopted and promulgated under the Public Law 89-306, and Bureau of the Budget Circular A-86 entitled, Standardization of Data Elements and Codes in Data Systems.

CLEARINGHOUSE

The Clearinghouse for Federal Scientific and Technical Information, operated by NBS, supplies unclassified information related to Government-generated science and technology in defense, space, atomic energy, and other national programs. For further information on Clearinghouse services, write:

Clearinghouse
U.S. Department of Commerce
Springfield, Virginia 22151

